INDUSTRIAL MEDICINE *and* SURGERY

Established 1932

APRIL 1960

Volume 29 Number 4

Full-Time Corrective Action

in mild depression and chronic fatigue

Deaner®

tablets deanol acetamidobenzoate

Improves *night-time* restoration and *day-time* performance

- Gradually prepares patient to awaken better rested and more alert
  ...permits sounder sleep
  ...lessens sleep requirements
- Increases daytime energy
- Counteracts mild depression
  ...acts to stabilize emotionally disturbed patients with or without concomitant disease
- Useful in treating children with learning defects and behavior problems...lengthens attention span
- Unlike monoamine inhibitors. It is not necessary to monitor Deaner's administration with repeated laboratory tests...Deaner may be given with safety to patients with previous or current liver disease, kidney disease or infectious diseases.

'Deaner' is supplied in scored tablets containing 25 mg. of 2-dimethylaminoethanol as the *p*-acetamidobenzoic acid salt.

In Mild Depression

chronic fatigue and many other emotional and behavioral problems

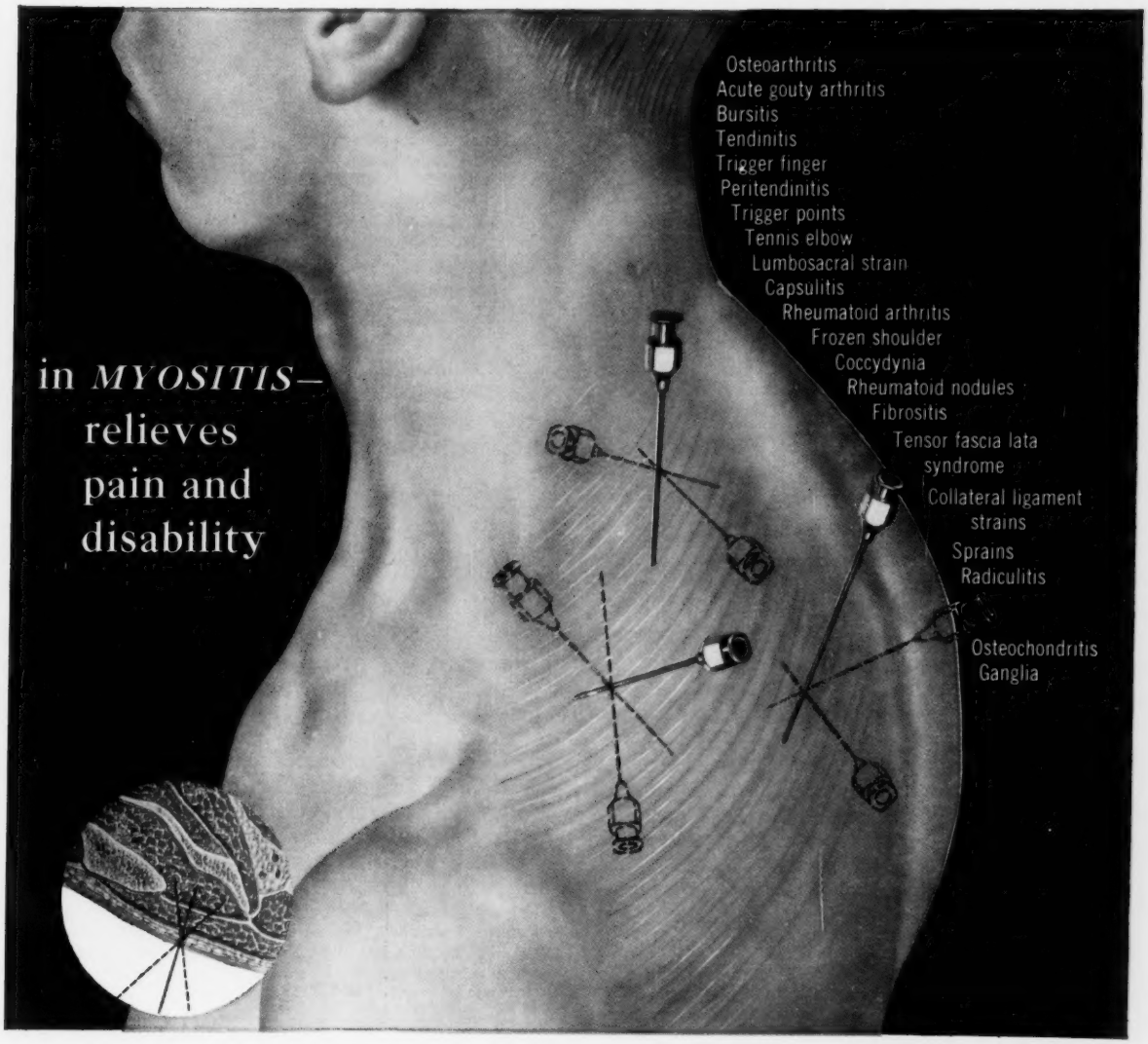
Literature, file card and bibliography on request

Riker Northridge, California

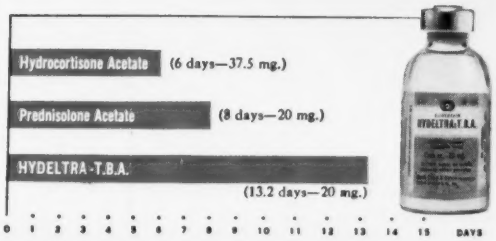
HYDELTRA® -T.B.A.

(Prednisolone *tertiary*-butylacetate, Merck)

for relief that lasts – longer



Anti-inflammatory effect lasts longer than that provided by any other steroid ester

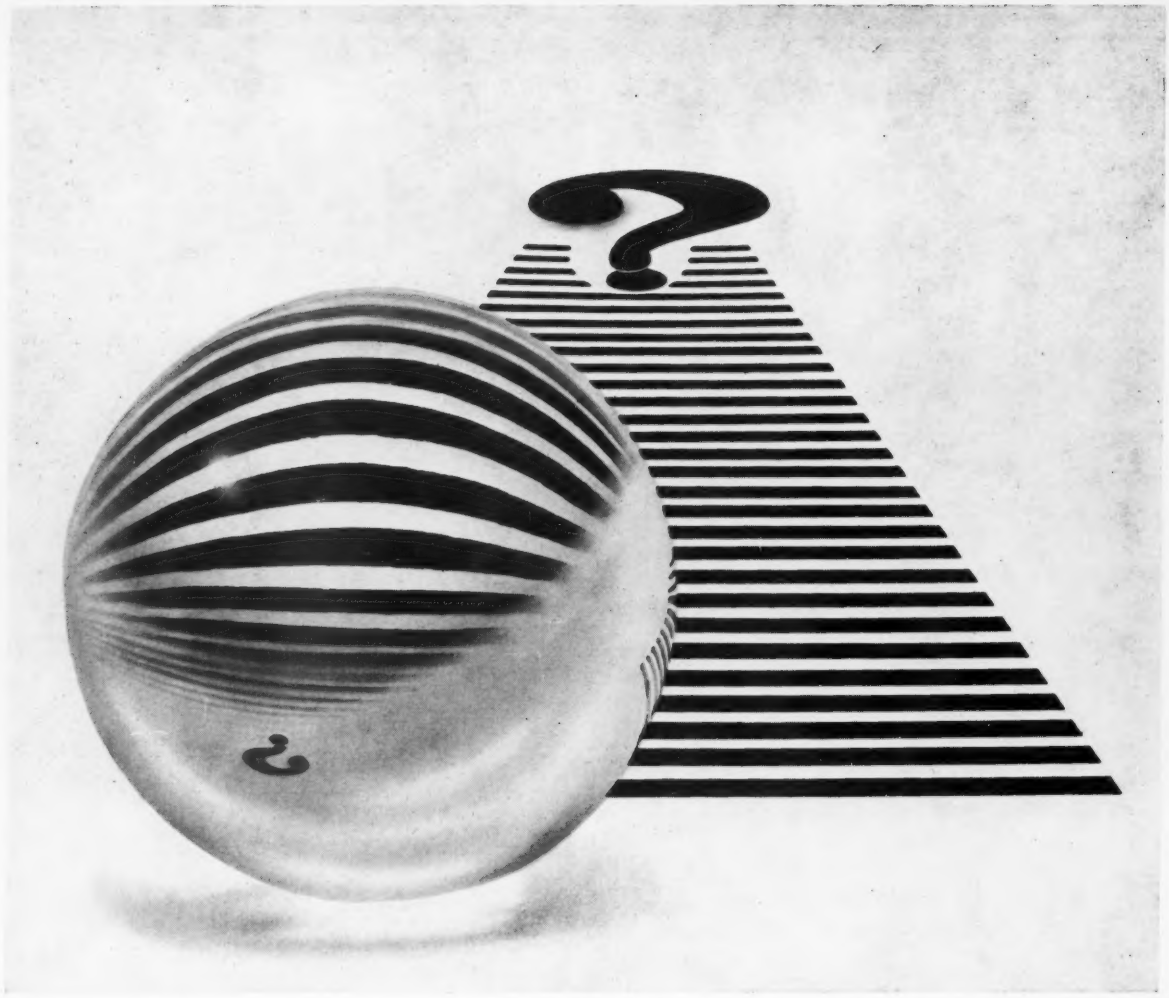

Hydrocortisone Acetate
(6 days—37.5 mg.)
Prednisolone Acetate
(8 days—20 mg.)
HYDELTRA-T.B.A.
(13.2 days—20 mg.)
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 DAYS

DOSAGE: the usual intra-articular, intra-bursal or soft tissue dose ranges from 20 to 30 mg. depending on location and extent of pathology.

SUPPLIED: Suspension 'HYDELTRA'-T.B.A. 20 mg./cc. of prednisolone *tertiary*-butylacetate, in 5-cc. vials.

MSD

MERCK SHARP & DOHME
DIVISION OF MERCK & CO., INC.
PHILADELPHIA 1, PA.



what lurks beyond the broad spectrum?

Broad spectrum antibiotics provide the best means of combating pathogenic organisms which range all the way from large protozoa through gram-negative and gram-positive bacteria to certain viruses at the far end of the spectrum.

But beyond the spectrum lurk pathogenic fungi. It is increasingly apparent that fungal superinfections may occur during or after a course of broad spectrum antibiotics.[1,2] Long term debilitating diseases, diabetes, pregnancy, corticosteroid therapy, high or prolonged antibiotic dosage, and other causes may predispose to fungal superinfections.[1,3,4]

Mysteclin-V controls infection and prevents superinfection. It makes a telling assault on bacterial infections and, in addition, prevents monilial overgrowth.[2,5-8] Mysteclin-V is a combination of tetracycline phosphate complex for reliable control of most infections encountered in daily practice, and Mycostatin, the safe antifungal antibiotic. When you prescribe Mysteclin-V, you provide "broad spectrum therapy" plus extra protection that extends beyond the spectrum of ordinary antibiotics.

In pediatrics: Mysteclin-F for Aqueous Drops and Mysteclin-F for Syrup are phosphate-potentiated tetracycline combined with the new antifungal antibiotic, Fungizone (amphotericin B). They provide good-tasting, fruit-flavored aqueous liquids for your pediatric patients.

Supplied: Mysteclin-V Capsules (250 mg./250,000 u.); Half-strength Capsules (125 mg./125,000 u.); Mysteclin-F for Syrup (125 mg./25 mg. per 5 cc.); for Aqueous Drops (100 mg./20 mg. per cc.)

References: 1. Dowling, H. F.: Postgrad. Med. *23*:594 (June) 1958. 2. Gimble, A. I.; Shea, J. G., and Katz, S.: Antibiotics Annual 1955-1956 New York, Medical Encyclopedia Inc., 1956, p. 676. 3. Long, P. H., in Kneeland, Y., Jr., and Wortis, S. B.: Bull. New York Acad. Med. *33*:552 (Aug.) 1957. 4. Rein, C. R.; Lewis, L. A., and Dick, L. A.: Antibiotic Med. & Clin. Ther. *4*:771 (Dec.) 1957. 5. Stone, M. L., and Mersheimer, W. L.: Antibiotics Annual 1955-1956, New York, Medical Encyclopedia Inc., 1956, p. 862. 6. Campbell, E. A.; Prigot, A., and Dorsey, G. M.: Antibiotic Med. & Clin. Ther. *4*:817 (Dec.) 1957. 7. Chamberlain, C.; Burros, H. M., and Borromeo, V.: Antibiotic Med. & Clin. Ther. *5*:521 (Aug.) 1958. 8. From, P., and Alli, J. H.: Antibiotic Med. & Clin. Ther. *5*:639 (Nov.) 1958.

Mysteclin-V

Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin)

SQUIBB *Squibb Quality - the Priceless Ingredient*

'MYSTECLIN'®, 'SUMYCIN'®, 'MYCOSTATIN'®, AND 'FUNGIZONE'® ARE SQUIBB TRADEMARKS.

INDUSTRIAL MEDICINE and SURGERY

ESTABLISHED 1932

The International Journal of Medicine in Industry

APRIL, 1960
VOLUME XXIX
NUMBER 4

CONTENTS

Diagnosis of Paralysis Following Surgical Procedures 137
A. A. Marinacci, M.D.

Extended First-Aid for the Badly Injured in Industry 148
Friedrich Wechselberger, M.D.

Clinical Observations with Chymotrypsin 150
L. H. Teitel, M.D., S. J. Siegel, M.D., J. Tendler, M.D., P. Reiser, M.D., S. B. Harris, M.D.

Proposed Medical Standards for the Operators of Commercial Vehicles 153
Seward E. Miller, M.D.

Work in the Works 160

The Physician and His Records in the Witness Chair 162
C. W. Muehlberger, Ph.D.

A Decree Governing Occupational Medical Services in Spain 166
Ralph F. Schneider, M.D.

The Relationship of the Occupational Environment to Chronic Diseases 169
Thomas F. Mancuso, M.D., M.P.H.

Tennis Elbow 173
James Wall, M.D.

An International Classification of Radiographs of the Pneumoconioses 176

Hygienic Norms in Hungary 181
John Bonta, M.D.

Abstracts, Books 183

Editorials: What Is a Profession? 185

Para 186

Personal News & Notes 4, 6, 8

Comment and Opinion 43

Index of Advertisers 48

INDUSTRIAL MEDICINE AND SURGERY, The Journal of Medicine in Industry (with which are consolidated "The Industrial Doctor" and "International Journal of Medicine and Surgery"): Entered as second class matter August 28, 1941, at the Post Office at Chicago, Illinois, under the Act of March 3, 1879. Reentered, October 3, 1949. Additional entry at Sheboygan, Wisconsin. Published on the fifth of each month by INDUSTRIAL MEDICINE PUBLISHING COMPANY, Miami, Florida. STEPHEN G. HALOS, Chairman; STEPHEN F. HALOS, President; HAROLD A. HOOPER, Treasurer; CAREY P. MCCORD, M.D., Editor; JOHN A. LAWRENCE, Managing Editor; A. D. CLOUD, Editorial Consultant; LUCILLE H. GROSS, Circulation Manager; T. W. PINKARD, Production Manager. EXECUTIVE OFFICES, 400 S.W. 69th Avenue, Miami 44, Florida. PUBLICATION, EDITORIAL AND CIRCULATION matters should be addressed to P. O. Box 44-306, Miami 44, Florida.

Subscriptions in United States $6.00 per year, $10.00 for 2 years; in Canada $8.00 per year, $14.00 for 2 years; in other countries $12.00 (U.S. Currency) per year, $20.00 for 2 years. Single copies $1.25. Title Registered in United States Patent Office. Registered Canada, 1942.

Copyright, 1960, by INDUSTRIAL MEDICINE PUBLISHING COMPANY.

CHANGE OF ADDRESS: Five weeks' notice required; changes cannot be made without old address as well as new; please furnish zone number for new address if city requries it.

BPA

PERSONAL NEWS AND NOTES

EDWARD P. LUONGO, M.D., of Los Angeles, has been appointed Regional Medical Director for the West Coast, Mobil Oil Company.

DR. LUONGO had been Medical Director of General Petroleum Corporation since 1947. General Petroleum became a part of Mobil Oil Company on January 1, 1960.

His responsibilities will continue to include California, Oregon, Washington, Idaho, Nevada, Utah, Arizona, Alaska, the w ern half of Colorado as well as the Four Corners area of New Mexico.

A native of Annapolis, Maryland, he received his M.D. degree from Georgetown University. DR. LUONGO is a member of the American, Los Angeles County, California, Industrial, and Western Industrial Medical Associations, Medical Society District of Columbia, American Public Health Association and the American Academy of Occupational Medicine.

He also is a member of the Medical Advisory Committee, American Petroleum Institute; Board of Directors, Los Angeles County Heart Association; and the Advisory Committee on Alcoholism, Los Angeles City Health Department.

He is a Diplomate and founder of the American Board of Occupational Medicine; Associate Clinical Professor of Industrial Medicine, UCLA School of Medicine; and Associate Clinical Professor of Preventive Medicine and Public Health, and Lecturer in Public Health, UCLA Postgraduate Division, School of Public Health.

ROBERT S. AYERLE, M.D., was recently appointed Medical Director of Bell Telephone Company of Pennsylvania.

DR. AYERLE received a B.S. in chemical engineering from Villanova University. After a year's further study in chemical engineering at Princeton, he attended the University of Pennsylvania Medical School where he received his medical degree.

He served with the U.S. Army Medical Corps as First Lieutenant from June, 1951, to July, 1953. Before joining Bell Telephone in October, 1959, he was Assistant Medical Director of the Pennsylvania Railroad.

WILLIAM B. LONG, M.D., of Salisbury, Md., has been appointed Director of the Symington Wayne Corporation's newly created Medical Department.

In his new post, DR. LONG will direct the medical services of all divisions of the corporation. Symington Wayne's principal office is in Salisbury, Maryland, and its American subsidiaries and divisions are in Salisbury, Depew, N. Y.; Philadelphia, Pa.; Fort Wayne, Indiana; Ironton, Ohio; Salt Lake City, Utah, and Oakland, California.

DR. LONG has practiced surgery in the Salisbury, Maryland, area for 14 years.

He is a member of the staff of Peninsula General Hospital, where he has been Chief Surgeon since 1953.

He received his premedical training at the University of Maryland and his medical degree, with honors, from the Uni-

★ AMERICAN ASSOCIATION OF RAILWAY SURGEONS ★

Officers

President:
J. S. BELL, M.D., York, Nebraska.
President-Elect:
WALTER D. ABBOTT, M.D., Des Moines, Iowa.
Vice Presidents:
WILLIAM C. BECK, M.D., Sayre, Pennsylvania.
FUNSTON J. ECKDALL, M.D., Emporia, Kansas.
LAWRENCE W. LONG, M.D., Jackson, Miss.
Recorder:
JAMES K. STACK, M.D., Chicago.
Treasurer:
T. L. HANSEN, M.D., 139 West Van Buren, Chicago 5, Wabash 2-3200, Ext. 220.

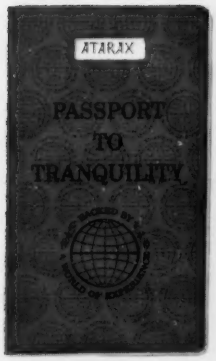
AMERICAN ASSOCIATION ★ RAILWAY ★ SURGEONS ★ FOUNDED 1888

Executive Board

ARTHUR R. METZ, M.D., Chairman, Chicago.
ERNEST C. OLSON, M.D., Chicago.
ROBERT M. GRAHAM, M.D., Chicago.
R. B. KEPNER, M.D., Chicago.
A. M. W. HURSH, M.D., Philadelphia.
R. WESTLINE, M.D., Chicago.
RAYMOND HOUSEHOLDER, M.D., Chicago.
J. M. L. JENSEN, M.D., Chicago.
J. R. WINSTON, M.D., Temple, Texas.
Secretary:
CHESTER C. GUY, M.D., 5800 Stony Island Avenue, Chicago 37, Midway 3-9200.

A GUIDE TO

THE REALMS OF INDUSTRIAL PRACTICE BEST ATTAINED WITH



ATARAX®

(brand of hydroxyzine)

World-wide record of effectiveness—over 200 laboratory and clinical papers from 14 countries. **Widest latitude of safety and flexibility**—no serious adverse clinical reaction ever documented. **Chemically distinct among tranquilizers**—not a phenothiazine or a meprobamate. **Added frontiers of usefulness**—antihistaminic; mildly antiarrhythmic; does not stimulate gastric secretion.

Areas of Special Usefulness	Supportive Clinical Observation	. . . and for additional evidence
IN AMBULATORY NEUROTICS	"Since this drug does not impair psychic function . . . it is especially well suited for ambulatory neurotics who must work, drive a car, or operate machinery." Ayd, F. J., Jr.: New York J. Med. **57**:1742 (May 15) 1957.	Garber, R. C., Jr.: J. Florida M. A. **45**:549 (Nov.) 1958. Menger, H. C.: New York J. Med. **58**:1684 (May 15) 1958.
IN PREMENSTRUAL TENSION	"The consensus appears to be that this agent has a definite calming effect on nervous and agitated subjects with symptoms such as . . . premenstrual tension. . . ." Shalowitz, M.: Geriatrics **11**:312 (July) 1956.	Schuller, E.: Gaz. des Hôpitaux **129**:391 (Apr. 10) 1957. Dolan, C. M.: California Med. **88**:443 (June) 1958.
IN ALCOHOLISM	Atarax ". . . is the tranquilizer of choice in the treatment of both acute and chronic stages, inpatient and outpatient, because of its safety, versatility, flexibility, and effectiveness." McGettigan, D. L.: In press.	Cohen, S.: Am. Pract. & Digest Treat. **8**:946 (June) 1957. Garber, R. C., Jr.: J. Florida M. A. **45**:549 (Nov.) 1958.

Dosage: One 25 mg. tablet or one tbsp. syrup q.i.d. For emotional emergencies, 25-50 mg. (1-12 cc.) I.M., 3-4 times daily q. 4 h. **Supplied:** Tiny 10 mg., 25 mg., and 100 mg. tablets. Syrup (10 mg. per tsp.), pint bottles. Parenteral Solution: 25 mg./cc. in 10 cc. multiple-dose vials; 50 mg./cc. in 2 cc. ampules. Prescription only.

Rx PFIZER

New York 17, N. Y.
Division, Chas. Pfizer & Co., Inc.
Science for the World's Well-Being

versity of Maryland Medical School in 1937. He was an intern and resident in surgery at the University Hospital in Baltimore from 1937 to 1941, and had a fellowship in surgery at the Lahey Clinic, Boston, Mass., in 1941 and 1942.

From 1942 to 1946, he served as a medical officer with combat units and at base hospitals of the United States Army in the Pacific Theatre. He completed his service with the rank of Major.

DR. LONG has been an instructor of postgraduate surgery at the University of Maryland Medical School. He is Courtesy Staff Surgeon at the Nanticoke Memorial Hospital, Seaford, Delaware.

A Governor and past President of the Maryland Chapter of the American College of Surgeons, DR. LONG is a member of the American Medical Association, the Medical and Chirurgical Faculty of Maryland, the American Board of Surgery, the Southeastern Surgical Congress, the Southern Medical Association and the Wicomico County Medical Society.

Section on Medical Sciences of the American Association for the Advancement of Science is sponsoring a Symposium on Radioactivity in Man, Measurements and Effects of Internal Gamma Ray Emitting Radioisotopes, at Vanderbilt University, April 18th and 19th, 1960.

This conference was made possible by a grant from the United States Steel Foundation to the American Association for the Advancement of Science and is supported in part by the Division of Biology and Medicine of the Atomic Energy Commission, the Public Health Service and the Army Medical Research and Development Command.

The program will deal with many phases of radiation hazards and prevention, and the detection of radiation in environments and human beings. For further information, write: George R. Meneely, M.D., School of Medicine, Dept. of Medicine, Vanderbilt University, Nashville 5, Tennessee.

ANTHONY A. MIRA, M.D., has been appointed Medical Director of the General Telephone Company of California in Santa Monica.

DR. MIRA received his B.S. degree in 1929 at the College of the City of New York and his M.D. degree in 1933 from the George Washington University School of Medicine, Washington, D.C.

He was Medical Director of the New York City Department of Welfare from 1945 to 1954 and has also served as Medical Director of Sun Chemical Corp., and of Gimbel Bros., New York City. Since 1957, he has been Director of the Bureau of Industrial Health and Workmen's Compensation of the Medical Society of the State of New York. From 1941 through 1945, he served with the United States Army and saw service for nearly three years in the Southwest Pacific area as chief of a surgical service.

DR. MIRA is a Fellow of the Industrial Medical Association, a Fellow of the American Public Health Association, a Fellow of the New York Academy of Medicine and has also served actively in the New York State Society of Industrial Medicine, Inc., and the Queens County Medical Society of the State of New York and the American Medical Association. He was a member of the Advisory Committee and the Board of Directors of the Brooklyn Tuberculosis and Health Association, the Workmen's Compensation Board of the State of New York, and the New York City Welfare Department and has served as a special examiner to the New York City Department of Education.

FREDERICK H. PIERCE, M.D., former Chief of Aviation Medical Service at the U. S. Army Hospital at Camp Wolters, Texas, has been named plant physician of Delco-Remy Division, Anderson, Indiana.

He assumed his new duties on Jan. 18, 1960, according to R. C. SWAN, M.D., Divisional Medical Director, who announced the appointment.

DR. PIERCE recently was released from active duty by the U. S. Army after he had completed his military service obligations. He holds the rank of Captain in the U. S. Army Reserve.

While at Camp Wolters—home of the Army's Primary Helicopter School — DR. PIERCE supervised the work of a medical staff, was in charge of pilot physical examinations, was a member of the flight selection evaluation and aircraft accident boards, and served as president of the hospital staff medical board.

He studied at the University of Michigan, Ann Arbor, where he earned his B.S. degree in 1952 and his M.D. degree in 1955. He interned at St. Mary's Hospital in Grand Rapids, Mich.

After serving briefly as assistant city physician in Grand Rapids he entered military service and was assigned to the Plastic Surgery Service at the 2000-bed Brooke Army Hospital at Ft. Sam Houston, Texas.

DR. PIERCE later was transferred to Pensacola, Fla., where he attended the Board of Aviation Medicine. While there he also completed Naval cadet flight training requirements.

Following this assignment he was transferred to Camp Wolters where he was stationed from August, 1957 until his release from active duty.

GORDON B. MAGILL, M.D., Fargo, N. D., has been elected medical officer of the American Life & Casualty Co. DR. MAGILL has been in practice with his wife, DR. JANE MAGILL. He took premedical work at Princeton University and is a graduate of the Columbia University College of Physicians & Surgeons. He served his internship at Lenox Hospital, New York City, served with the Navy and established medical residency at the Navy Hospital, St. Alban's, N. Y.

Both DR. MAGILL and his wife engaged in medical research work in Egypt from 1949 to 1953 as part of a Navy unit and in 1954 they joined the Memorial Hospital and Sloan-Kettering Institute for Cancer Research in New York, later engaging in private practice at Denver, Colo. They moved to Fargo a year ago.

Armour Pharmaceutical Company Announces a New Systemic Enzyme

Chymoral

I AM PLEASED to inform you of the latest development of our Company's research.

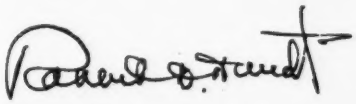
To the expanding field of systemic anti-inflammatory enzymes we are introducing Chymoral. It is a specially coated tablet specifically designed for intestinal absorption. The activity is supplied by a purified concentration which has specific trypsin and chymotrypsin activity in a ratio of approximately six to one.

During past months, clinical investigators have evaluated Chymoral in a wide range of inflammatory conditions. They have reported to us as well as to the medical journals on the therapeutic response, convenience and safety of this oral form.

Patients have responded very well on a Chymoral dosage schedule of 2 tablets q.i.d. and one tablet q.i.d. for maintenance. Important, too, is the fact that where other therapeutic agents were used there were no incompatibilities.

Chymoral is indicated in a wide range of inflammatory conditions to control inflammation, curtail swelling and curb pain.

If you would care to review some of the published reports on Chymoral we shall be happy to send reprints of these papers to you.



Robert A. Hardt
President

1. Beck, C.; Levine, A. J.; Davis, O. F., and Horwitz, B.: Clinical Studies with an Oral Anti-inflammatory Enzyme Preparation. Accepted for publication in Clin. Med. (March) 1960. 2. Billow, B. W.; Cabodevilla, A. M.; Stern, A.; Palm, A.; Robinson, M., and Paley, S. S.: Clinical Experiences with an Oral Anti-Inflammatory Enzyme for Intestinal Absorption. Accepted for publication in Southwestern Med. (May) 1960. 3. Teitel, L. H.; Siegel, S. J.; Tendler, J.; Reiser, P., and Harris, S. B.: Clinical Observations with Chymotrypsin in 306 Patients. Accepted for publication in Indust. Med. (April) 1960. 4. Clinical Reports to the Medical Dept., Armour Pharmaceutical Company, 1959. 5. Reich, W. J., and Nechtow, M. J.: Scientific Exhibit, Chicago Medical Society (March) 1960. 6. Taub, S. J.: Paper presented Annual Meeting, ΠΛΚ Medical Fraternity, Miami, Florida (March) 1960.

© 1960, A. P. Co.

INDUSTRIAL HEALTH CONFERENCE

45th Annual Meeting of

INDUSTRIAL MEDICAL ASSOCIATION

Industrial Medical Association, American Association of Industrial Nurses, Inc., American Industrial Hygiene Association, American Association of Industrial Dentists, American Conference of Governmental Industrial Hygienists, as well as representatives of industrial management, labor and others concerned with industrial health will participate in the conference devoted to the theme of keeping workers healthy by providing better preventive medical service in industry and control of potentially dangerous exposure in the rapidly changing American technology.

Rochester, New York, April 26-28, 1960

For registration and information, write: Clark D. Bridges, Managing Director, Industrial Medical Association, 25 East Jackson Blvd., Chicago 4, Illinois.

C. CRAIG WRIGHT, M.D., has joined the Reynolds Metals Company at Florence, Ala., as plant physician based at the aluminum firm's two-plant Listerhill operations.

He succeeds J. H. HAGAN, M.D., who is leaving to private practice in Georgia.

DR. WRIGHT has had intensive special training in preventive and industrial medicine in a three year residency at Ohio State University where he was awarded B.A. and M.D. degrees in 1953. As part of his three year residency at Ohio State, DR. WRIGHT was assigned to the Pan American World Airways industrial medicine program. In that program he traveled widely, visiting the airline's foreign bases on medical matters.

In the three years between his Ohio State graduation and his return there for the special industrial medicine residency, DR. WRIGHT served in the Air Force with one year as an intern at New York's Bellevue Hospital and two years at Shaw Air Force Base in South Carolina as base flight surgeon and commander of the 363rd Airborne Tactical Hospital.

DR. WRIGHT'S responsibilities include health and medical matters within the plants as well as the usual clinical duties of an industrial physician. His special training in industrial medicine will make his work of special value to the approximately 4,000 people employed in the two big Reynolds Listerhill plants.

DOUGLAS W. SHEPHERD, former associate director of the Industrial Health Council of Greater Atlanta, has been elected vice president of Occupational Health Services, Inc.

C. F. HOLTON, M.D., retired as Chief Surgeon at the Central of Georgia Railway Hospital after 14 years of service. He is succeeded by JOHN G. SHARPLEY, M.D., Assistant Chief Surgeon.

DR. HOLTON left his post in accordance with the railroad's mandatory retirement age of 70. He will retain his private practice. He is a Past President of the Georgia Medical Society, Past President and founder of the Georgia Industrial Surgeon Assn., Past President of the Medical Assn. of Georgia, and a member of the A.M.A., and Southern Medical Assn.

DR. SHARPLEY has been Assistant Chief Surgeon since Oct., 1948. He was appointed resident physician in July, 1934, in which position he served for two years before graduate work at the University of Pennsylvania.

He returned to Savannah and was appointed Central of Georgia Railway Company surgeon in 1938 and served in that capacity until named Assistant Chief Surgeon.

Postgraduate Course, "Effects of Air Pollution and Environment on Health," will be presented at the University of Wisconsin, May 19-20, 1960. The course Director is SEYMOUR B. CREPEA, M.D., Associate Professor of Medicine and Director of the Allergy Clinic at University Hospitals. This will be a clinical discussion on various phases of air pollution and their effect on health. Industrial pollution, air-borne infections and problems of rural air pollution will be considered. Speakers and discussants will be drawn from the United States Public Health Service, the Veterans Administration and several medical schools in addition to the University of Wisconsin.

For further information, write DR. ROBERT C. PARKIN, Coordination, University of Wisconsin Medical School, 418 N. Randall Avenue, Madison 6, Wisconsin.

Council on Industrial Health of the American Medical Association, printed its "Guide for Industrial Immunization Programs" in *Journal of the American Medical Association* of Deo ember 12, 1959 (Vol. 171, No. 15). Reprints of the "Guide" are available from American Medical Association, Council on Industrial Health, 535 North Dearborn Street, Chicago 10. Individual copies are free, but there is a charge for a quantity of reprints.

against pain

Zactirin®

Ethoheptazine Citrate (75 mg.) with Acetylsalicylic Acid (325 mg.) Wyeth

Provides potent analgesic
and anti-inflammatory benefits
without sedation,
risk of addiction,
tolerance or constipation.

Supplied: Tablets, bottles of 48

Wyeth Laboratories Philadelphia 1, Pa.

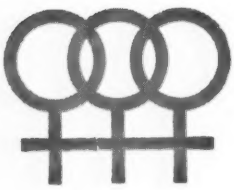
100 Anniversary 1860 Wyeth®

A Century of Service to Medicine

PREMENSTRUAL TENSION

Edema

hormonal imbalance



STRU L

tonsi na

no part of the premenstrual tension syndrome is left untreated with new

CYTRAN*

E. ...Cytran's diuretic component (Cardrase†) starts to relieve premenstrual edema *within a few hours.* **A.** ...A mild tranquilizer (Levanil†) comforts the strained emotions, the mental tension, *right after the first dose.* **I.** ...The new progestin (Provera†) corrects the major underlying cause of the syndrome —hormonal imbalance—by normalizing the estrogen-progesterone ratio. This serves not only to reduce edema and anxiety but also helps to control *other* symptoms such as abdominal discomfort, headache, shakiness, and fatigue.

Each tablet contains: Provera (medroxyprogesterone acetate), 2.5 mg.; Cardrase (ethoxzolamide), 35 mg.; Levanil (ectylurea), 300 mg.

DOSAGE: 1 to 3 tabs. daily, 7-10 days before the period

The Upjohn Company
Kalamazoo, Michigan

Upjohn

*TRADEMARK †TRADEMARK, REG. U. S. PAT. OFF.

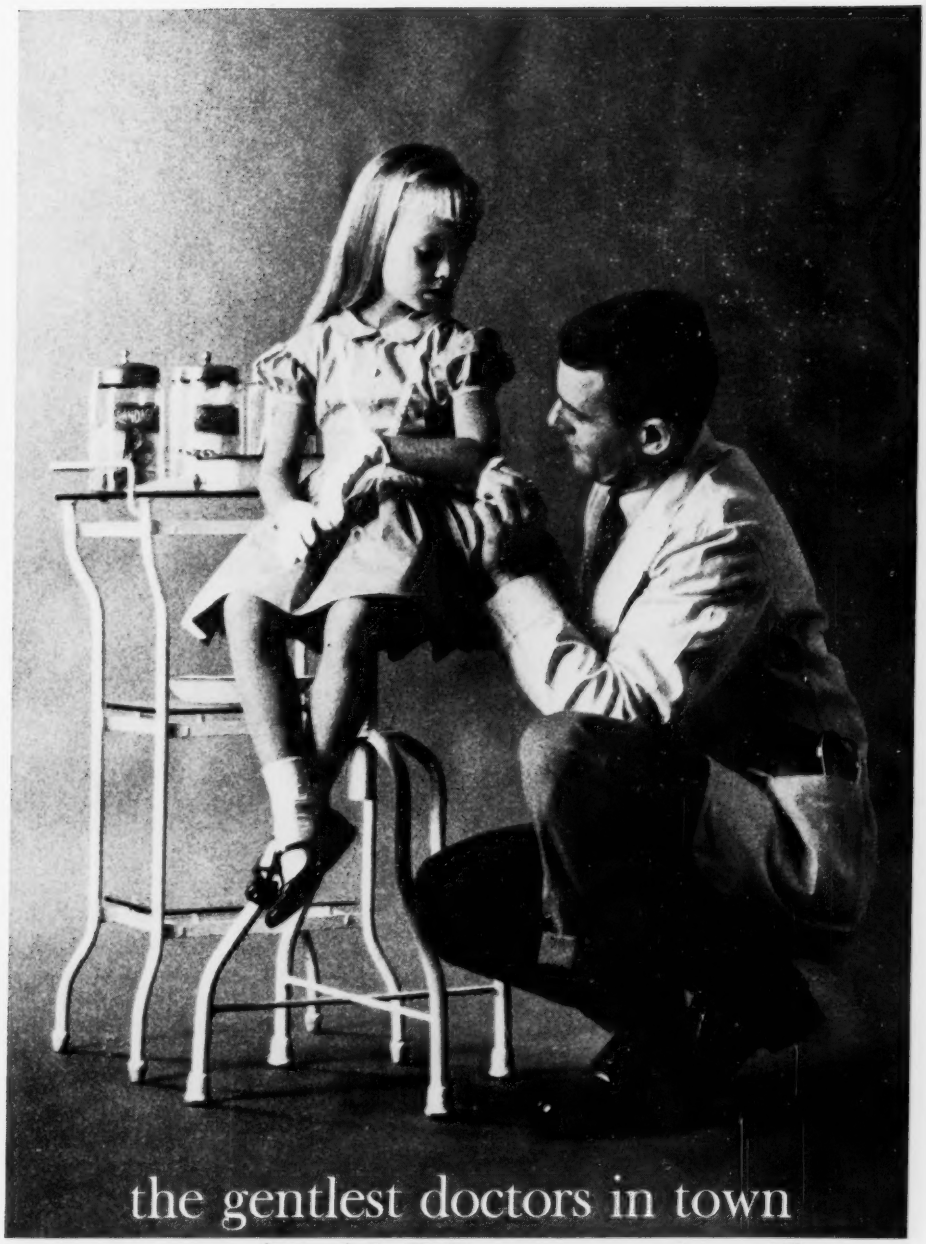
No Other Personnel Program Brings So Many Direct Benefits to Management Yet Costs So Little

IN MINUTES

per employee, using the Titmus Vision Tester, your medical staff can increase productivity, reduce injuries, damage, spoilage, compensation and insurance expense, often transforming mentally and physically unhappy individuals into efficient, dependable people. A rewarding management benefit is the gratitude of employees who have been helped, and who had no previous awareness of their need. The Titmus tester, easiest to use, most accurate ever made, makes periodic testing *profitable* for *every* plant, small or large. Write for free brochure today!

Titmus OPTICAL COMPANY, INC. • PETERSBURG, VIRGINIA

One of the World's Largest Manufacturers of Ophthalmic Materials



the gentlest doctors in town

stop pain with Nupercainal®
(dibucaine CIBA)

...For minor cuts and burns, sunburn, hemorrhoids, removing sutures, performing routine office surgery, making instrument examinations. And, to best suit every situation, there's a choice of Ointment, Cream, Lotion, Suppositories.

CIBA
SUMMIT, N. J.

2/2774MB

Complete information available on request.

balanced weave
assures
uniform
support

NOW...BETTER THAN EVER BECAUSE

B-D

a scientifically determined ratio of warp (lengthwise) to woof (cross) threads in every ACE Bandage provides a pressure pattern that—

- guarantees even and controlled stretch
- insures firmness under tension
- prevents bunching
- minimizes possibility of vein constriction

ACE

RUBBER ELASTIC BANDAGE

BECTON, DICKINSON AND COMPANY
RUTHERFORD, NEW JERSEY

B-D AND ACE ARE REGISTERED TRADEMARKS. 77760

superior topical corticosteroid

In convenient aerosol spray—for the treatment of dermatoses, particularly in out-of-reach problem areas—a fresh approach to therapy

- the superior anti-inflammatory effect of Kenalog Spray[1-7] provides anti-inflammatory, antiallergic, and antipruritic relief in acute, exudative, weeping lesions, even in extensive, out-of-reach problem areas.
- minimal local irritation and less chance of local contamination.
- metabolic studies show electrolyte disturbance does not occur when Kenalog is applied topically.[1, 4, 5]
- easy to apply, gives broad, even coverage, and permits observation of lesions as they heal.

Indications: Atopic dermatitis, contact dermatitis, eczematous dermatitis, neurodermatitis, seborrheic dermatitis, insect bites, pruritus ani and vulvae, lichen simplex chronicus, exfoliative dermatitis, stasis dermatitis, nummular eczema, sunburn.

Dosage: Apply the spray to the affected areas from a distance of 3 to 6 inches, t.i.d. or q.i.d. A 3-second spray (delivering approximately 0.1 mg. of triamcinolone acetonide) covers an area about the size of the hand. *Cover the eyes when using Kenalog Spray on or near the face.*

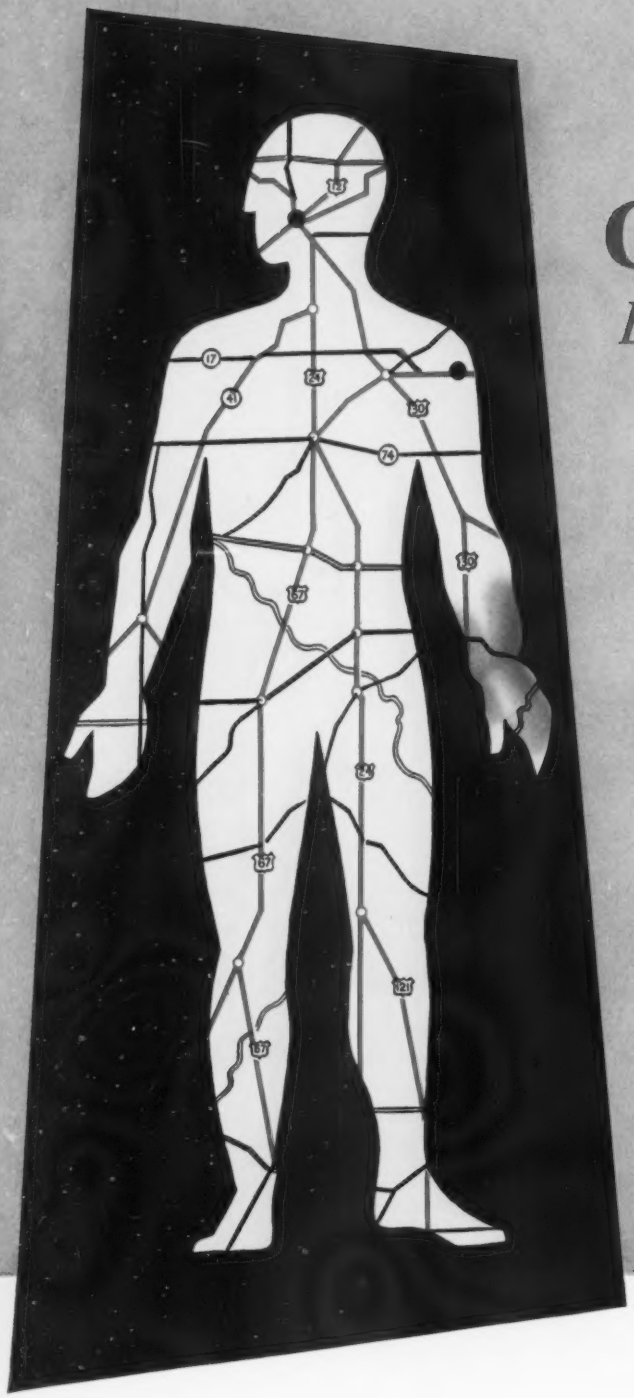
Supply: Kenalog Spray in 50 and 150 Gm. containers of 3.3 mg. and 10 mg. triamcinolone acetonide respectively. Also available—Kenalog Cream (0.1%), Kenalog Ointment (0.1%) and Kenalog Lotion (0.1%).

References: 1. Reports to the Squibb Institute for Medical Research. 2. Howell, C. M.: Squibb Clin. Res. Notes *1*:5 (Oct.) 1958. 3. Goodman, J. J.: Squibb Clin. Res. Notes *1*:1 (Oct.) 1958. 4. Smith, J. G., Jr.; Zawisza, B. J., and Blank, H.: Squibb Clin. Res. Notes *1*:6 (Oct.) 1958. 5. Fitzpatrick, T. B.; Crowe, F. W., and Walker, S. A.: Squibb Clin. Res. Notes *1*:1 (Oct.) 1958. 6. Lerner, A. B.: Squibb Clin. Res. Notes *1*:2 (Oct.) 1958. 7. Robinson, R. C. V.: Bull. School of Med., U. Maryland 43:54 (July) 1958.

'KENALOG'® IS A SQUIBB TRADEMARK.

SQUIBB

Squibb Quality—
the Priceless Ingredient



faster
healing
at any location

CHYMAR®

Buccal | Aqueous | Oil

superior anti-inflammatory enzyme

in industrial accidents controls inflammation, swelling and pain

Chymar prevents or reduces all types of inflammatory changes. It quickly dissipates edema and blood extravasates to improve local circulation, accelerate healing, relieve pain. Side effects that have been observed with steroid-type anti-inflammatory agents do not occur with Chymar.

Chymar is effective as routine first aid in:

major sprains • fractures • bruises
contusions • hematomas • wounds

CHYMAR *Buccal*—Crystallized chymotrypsin in a tablet formulated for buccal absorption. Bottles of 24 tablets. Enzymatic activity, 10,000 Armour Units per tablet.

CHYMAR *Aqueous*—Solution of crystallized chymotrypsin in sodium chloride injection for intramuscular use. Vials of 5 cc. Enzymatic activity, 5000 Armour Units per cc.

CHYMAR—Suspension of crystallized chymotrypsin in oil for intramuscular injection. Vials of 5 cc. Enzymatic activity, 5000 Armour Units per cc.

ARMOUR PHARMACEUTICAL COMPANY • KANKAKEE, ILLINOIS

Armour Means Protection

© 1959, A. P. Co.

IN DYSMENORRHEA, "tranquilaxant" treatment with *Trancopal*®

keeps most patients *"on the go..."*

Since "... dysmenorrhea is a symptom complex which has no one particular origin . . ."[1] tranquilaxant therapy, directed at *two* factors, has been particularly successful in alleviating menstrual pain and discomfort. The tranquilaxant, Trancopal "... combines the properties of tranquilization and skeletal muscle relaxation, with no concomitant change in normal consciousness."[2]

"...able to continue their normal activities..."[3]

Good to excellent results with Trancopal were obtained by Lichtman[3,4] in 139 of 173 patients with dysmenorrhea and premenstrual tension.[4] They ". . . had not only their symptoms controlled with chlormethazanone [Trancopal] but, even more important, the patients were in many instances able to continue their normal activities where previously they had been considerably restricted in their activities."[3]

Stough[5] studied 75 patients during 125 menstrual periods and found that complete or moderate relief with Trancopal was obtained during 86.4 per cent of the periods.

Shanaphy[2] reported satisfactory results with tranquilaxant treatment with Trancopal in 41 of 50 patients with dysmenorrhea; 20 of these patients had been refractory to other methods of treatment.

"Side effects were noticeably absent . . ."[5]

Dosage: 100 or 200 mg. orally three or four times daily.

How Supplied: Trancopal Caplets®

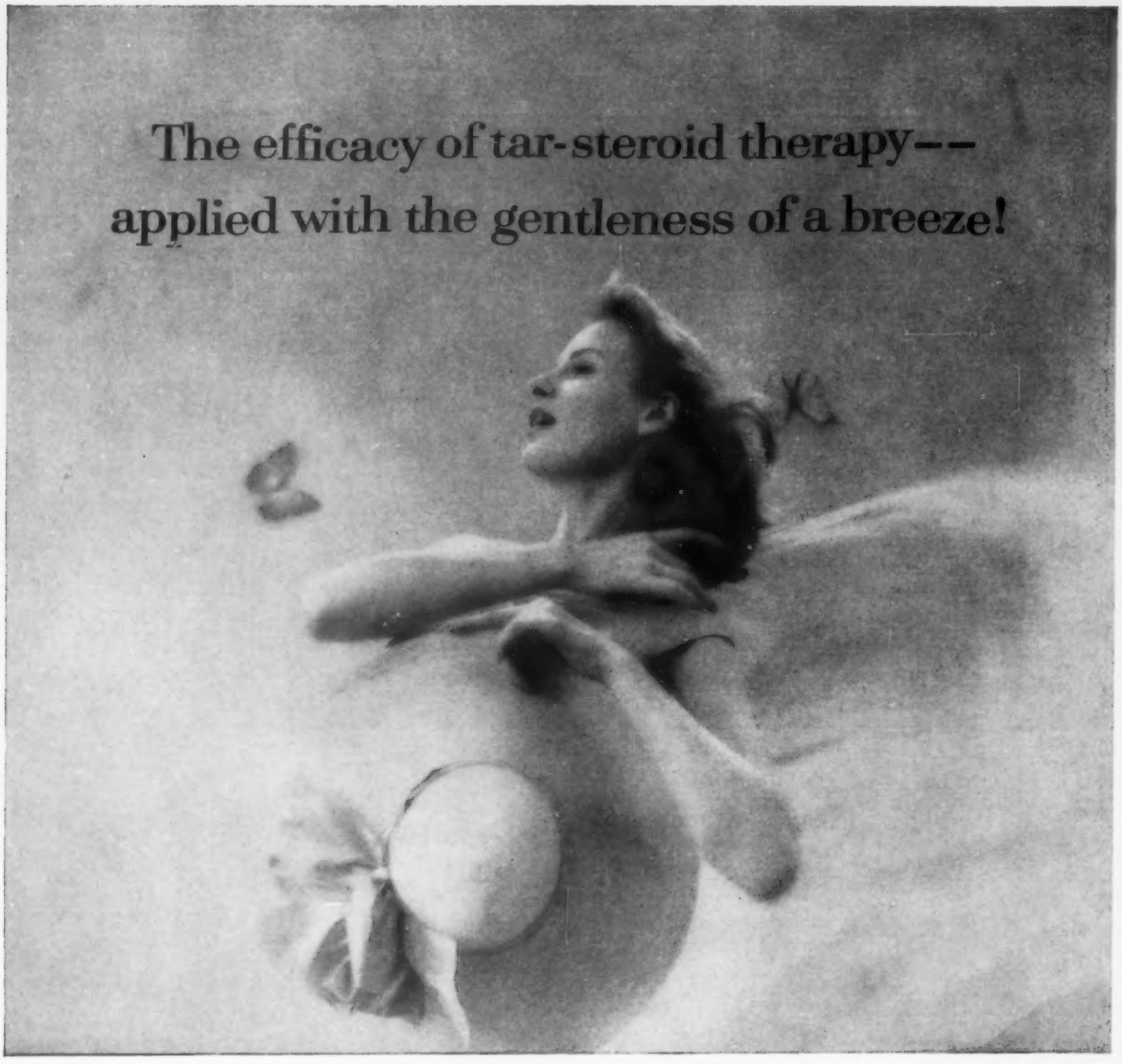
100 mg. (peach colored, scored), bottles of 100.
200 mg. (green colored, scored), bottles of 100.

References: **1.** Woodbury, R. A., in Drill, V. A.: Pharmacology in Medicine, ed. 2, New York, McGraw-Hill Book Company, Inc., 1958, p. 1003. **2.** Shanaphy, J. F.: *Current Therap. Res.* 1:59, Oct., 1959. **3.** Lichtman, A. L.: *Kentucky Acad. Gen. Pract. J.* 4:28, Oct., 1958. **4.** Lichtman, A. L.: Scientific Exhibit, International College of Surgeons, Miami Beach, Fla., Jan. 4-7, 1959. **5.** Stough, A. R.: *J. Oklahoma M. A.* 52:575, Sept., 1959.

Winthrop LABORATORIES • New York 18, New York

TRANCOPAL (BRAND OF CHLORMEZANONE) AND CAPLETS, TRADEMARKS REG. U.S. PAT. OFF.

PROFESSIONAL MODEL USED FOR PHOTOGRAPH.
1450M



In acute, subacute and chronic dermatoses

NEW TARCORTIN® AEROSOL

The effectiveness of TARCORTIN in a wide range of dermatoses has been shown in numerous published studies.[1-7] Now, the aerosol form offers these additional advantages: / **hands never touch affected surface / reaches inaccessible areas easily / provides instantly cooling relief / hexachlorophene for sustained antibacterial activity / economical for the patient.**

FORMULA: Hydrocortisone 0.5%; Special Coal Tar Extract (TARBONIS®) 5.0%; Hexachlorophene 1.0%, in 7 grams spray residue. 95 gram aerosol container, on prescription only.

Also available: TARCORTIN Cream and Lotion, NEO-TARCORTIN™ Ointment

Treatment without touch

References: 1. Bleiberg, J.: J. M. Soc. New Jersey *53*:371, 1956. 2. Clyman, S. G.: Postgrad Med. *21*:309, 1957. 3. Welsh, A. L. and Ede, M.: Ohio State M. J. *50*:837, 1954. 4. Abrams, B. P. and Shaw, C.: Clin. Med. *3*:839, 1956. 5. Welsh, A. L. and Ede, M.: J.A.M.A. *166*:158, 1958. 6. Welsh, A. L. and Ede, M.: Ohio State M. J. *55*:805, 1959. 7. Clyman, S. G.: Ind. Med. & Surg., *27*:531, 1958.

REED & CARNRICK *Kenilworth, New Jersey*

In the low back syndrome

relieves both stiffness and pain with safety... sustained effect

NOTABLE SAFETY—unusually low toxicity; no known contraindications; side effects are rare; drowsiness may occur, usually at higher dosage.

RAPID ACTION—starts to act quickly.

SUSTAINED EFFECT—relief lasts up to 6 hours.

EASY TO USE—usual adult dosage is one 350 mg. tablet 3 times daily and at bedtime.

SOMA T.M.
(carisoprodol Wallace)

Supplied
as white, coated, 350 mg. tablets, bottles of 50. Also available for pediatric use: *250 mg. orange capsules, bottles of 50.*

WALLACE LABORATORIES, *New Brunswick, New Jersey* *Literature and samples on request*

SYMPOSIUM REPORT:

ALTAFUR in surgical (soft tissue) infections

In a series of 159 patients with various types of surgical infections (cellulitis, abscess, wound infections), ALTAFUR was employed with eminently satisfactory results. The incidence and magnitude of surgery were considerably reduced in these cases, and when surgical intervention was necessary it could be delayed until the inflammatory process had receded or become localized.

Excellent therapeutic response was obtained in patients with infections due to coagulase positive Staphylococcus aureus, beta hemolytic Streptococcus, and Escherichia coli; these organisms were uniformly susceptible to ALTAFUR in vitro. An insensitive strain of Pseudomonas aeruginosa was isolated from the single patient who failed to respond. ALTAFUR was given orally to 150 patients, the majority receiving 100 mg. four times daily.* Duration of treatment ranged from 4 to 30 days, averaged 6 days. An experimental intravenous preparation of ALTAFUR was administered to 9 patients who could not take medication by mouth or whose condition warranted exceptionally high dosage. There was no clinical or laboratory evidence of toxicity in any case, and ALTAFUR was well tolerated by all but 1 of the 159 patients.

Prigot, A.; Felix, A. J., and Mullins, S.: Paper presented at the Symposium on Antibacterial Therapy, Michigan and Wayne County Academies of General Practice, Detroit, September 12, 1959 (published Nov. 1959)

*Experimental dosage (see dosage recommendations adjacent)

bright new star

in the antibacterial firmament

ALTAFUR®

brand of furaltadone

the first nitrofuran effective orally in systemic bacterial infections

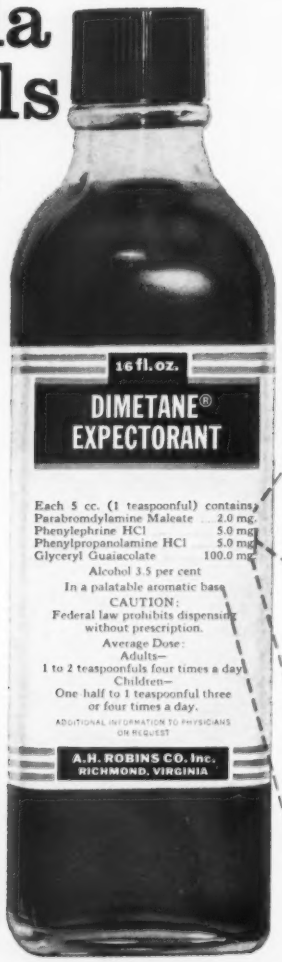
- Antimicrobial range encompasses the majority of common infections seen in everyday office practice and in the hospital
- Decisive bactericidal action against staphylococci, streptococci, pneumococci, coliforms
- Sensitivity of staphylococci in vitro (including antibiotic-resistant strains) has approached 100%
- Development of significant bacterial resistance has not been encountered
- Low order of side effects
- Does not destroy normal intestinal flora nor encourage monilial overgrowth (little or no fecal excretion)

Tablets of 50 mg. (pediatric) and 250 mg. (adult)
Average adult dose: 250 mg. four times a day, with food or milk
Pediatric dosage: 22-25 mg./Kg. (10-11.5 mg./lb. body weight daily in 4 divided doses

CAUTION: The ingestion of alcohol in any form, medicinal or beverage, should be avoided during Altafur therapy and for one week thereafter.

NITROFURANS—a *unique* class of antimicrobials
EATON LABORATORIES, NORWICH, NEW YORK

see how this new comprehensive formula controls cough!



the antihistamine most likely to succeed

two highly approved decongestants

the expectorant that works best—increases respiratory tract fluid almost 200%

tastes good!

for less frequent, more productive cough

DIMETANE® EXPECTORANT Robins

DIMETANE® EXPECTORANT-DC

with added dihydrocodeinone 1.8 mg./5 cc. when additional cough suppressant action is needed

B-D YALE®
STERILE
DISPOSABLE
NEEDLES
for the benefits
of disposability...
PLUS NEW
EASY-ENTRY POINTS
smooth, drag-free penetration
SAFER-HANDLING HUBS
surer finger grasp
TAMPER-PROOF PACKAGES
assured one-time use
FULL-PROTECTION SHEATHS
in the package—after filling—
to the moment of injection
now in sizes to meet most parenteral needs
manufactured, sterilized and controlled by
BECTON, DICKINSON AND COMPANY · RUTHERFORD, NEW JERSEY
In Canada: BECTON, DICKINSON & CO., CANADA, LTD., TORONTO 10, ONTARIO
a B-D DISCARDIT product
B-D, YALE, LUER-LOK, MULTIFIT AND DISCARDIT ARE
TRADEMARKS OF BECTON, DICKINSON AND COMPANY
74859

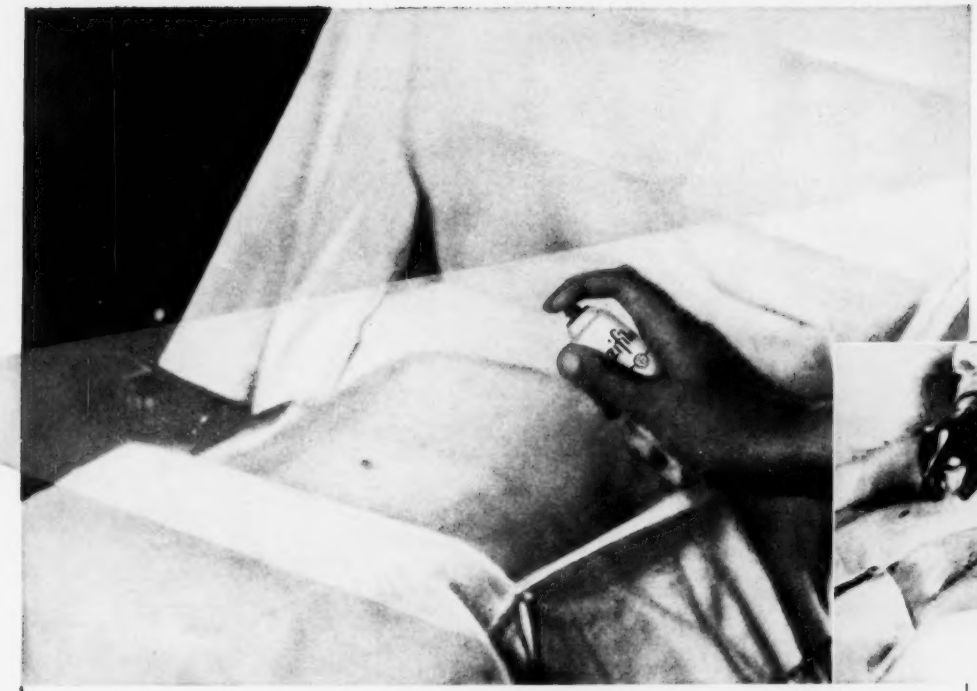
NEW spray-on surgical film controls bacteria even resistant hospital "staph"

REZIFILM is a methacrylate resin. On the skin, it forms a clear, firm, flexible barrier against airborne microorganisms. This physical protection is supplemented by the antibacterial activity of TMTD (tetramethylthiuram disulfide), readily diffusible from the plastic film to the skin beneath. TMTD, which is neither an antibiotic nor a sulfonamide, is highly active against a wide range of pathogenic bacteria, including many organisms resistant to the most commonly used antibiotics.[1]

Advantages:

• incision can be made directly through film,[2] minimizing or eliminating need for skin towels • does not impede healing[3] • no sensitization reactions reported • does not interfere with joint movement • more comfortable than adhesive bandages • protects against clothing irritation[4] • protects skin around enterostomy and fistula openings[5]

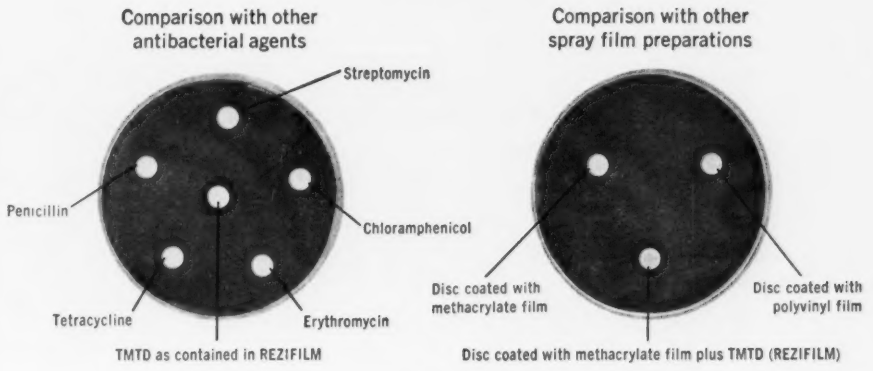
REZIFILM is *not* indicated as a dressing for second or third degree burns or for bleeding or granulating wounds.



PRE-OPERATIVELY
Rezifilm is applied after prepping of the surgical area. It functions as a secondary drape.

POSTOPERATIVELY
Rezifilm is applied following final closure of the incision. It provides comfortable protection against infection and irritation.

Compare the antibacterial activity of REZIFILM[6]



Streaked cultures of coagulase-positive Staphylococcus aureus, phage type 80/81; incubated 24 hours at 37°C.

An interesting 16 mm. color motion picture film (10 minutes) showing the use of REZIFILM *in surgery is available free of charge. Excellent for hospital and medical society meetings. Write to: Professional Service Department, Squibb, 745 Fifth Avenue, New York 22, N. Y.*

Supplied: 6 oz. (avd.) spray dispenser cans.

References: 1. Eisenberg, G. M.: *Antibiotic Med. & Clin. Ther.*, 6:594 (Oct.) 1959. 2. Thomson, J. E. M.: Report to The Squibb Institute for Medical Research, June, 1957. 3. Maloney, J. V. and Mulder, D. G.: *Am. Surgeon* 23:388 (April) 1957. 4. Bucher, R. M.: Report to The Squibb Institute for Medical Research, July 3, 1957. 5. Hammond, J. A.: Report to The Squibb Institute for Medical Research, May 3, 1957. 6. Eisenberg, G. M.; Weiss, W.; Spivack, A. P.; Bassett, J. G.; Ferguson, L. K., and Flippin, H. F.: Adapted from Scientific Exhibit, A.M.A. Meeting, June 8-12, 1959.

- *provides skin asepsis, both preoperatively and postoperatively*
- *preoperative preparation made more convenient and more secure*
- *wound always in sight through window-clear film*
- *more convenient and more economical than ordinary dressings*

Rezifilm

SQUIBB SURGICAL

SPRAY DRESSING
transparent plastic barrier
with antibacterial action

SQUIBB

SQUIBB QUALITY—THE PRICELESS INGREDIENT

'REZIFILM' IS A SQUIBB TRADEMARK

SOY-DOME™

CREME pH 5.0
soap
substitute

DOME

keeps productive workers on the job...
despite severe industrial dermatoses[1]

SOY-DOME . . . unique soapless skin cleanser, helped keep 74% of 134 patients on the job during fairly severe eruptions of chromate, cement and other industrial dermatoses.[1]

Pleasant-to-use SOY-DOME cleanses and establishes a more satisfactory environment for healing . . . provides abundant suds . . . helps restore and maintain normal skin acidity. Here is a welcome soap substitute in housewife's eczema, too.

SUPPLIED in 2 oz. tubes, 1 lb. jars. Contains Colloidal Soy Bean Complex* with 52% protein in the exclusive ACID MANTLE® vehicle.

1. Stritzler, C.: Indust. Med. & Surg. 28:420, 1959.

Professional samples on request.

*U.S. Pat. No. 2,876,164

DOME CHEMICALS INC. / 125 West End Ave., New York 23, N. Y.

New ORAL DECONGESTANT

DRISTAN®

TABLETS

afford a new degree of symptomatic relief from

- **SINUSITIS**
- **THE COMMON COLD**
- **ALLERGIC DISORDERS**

Minimizes the Hazard of Drowsiness on the Job

as compared with other preparations containing antihistamines

Unique 3-layer decongestant tablet development offers a combination of ingredients never before possible to put into a single tablet.

DRISTAN—*Faster In Therapeutic Action*

Regular Enteric Coated Tablet	3-Layer Uncoated Dristan Tablet
Disintegrates in 3 hours	Disintegrates in 7 minutes

Dristan Decongestant Tablets—afford *a new degree of relief* from the symptoms of sinusitis, nasal allergies, postnasal drip and the common cold by releasing:

(1) A POWERFUL VASCOCONSTRICTOR . . . phenylephrine hydrochloride. This shrinks swollen sinus membranes and promotes proper drainage.

(2) A UNIQUE ANTIHISTAMINE . . . phenindamine tartrate. Rarely produces drowsiness. Controls the edema and discharge caused by offending allergens.

(3) VITAMIN C. Under body stress such as fever and infectious diseases—the normal requirements double. The daily dose of Vitamin C in Dristan is *more than twice* the recommended daily allowance.

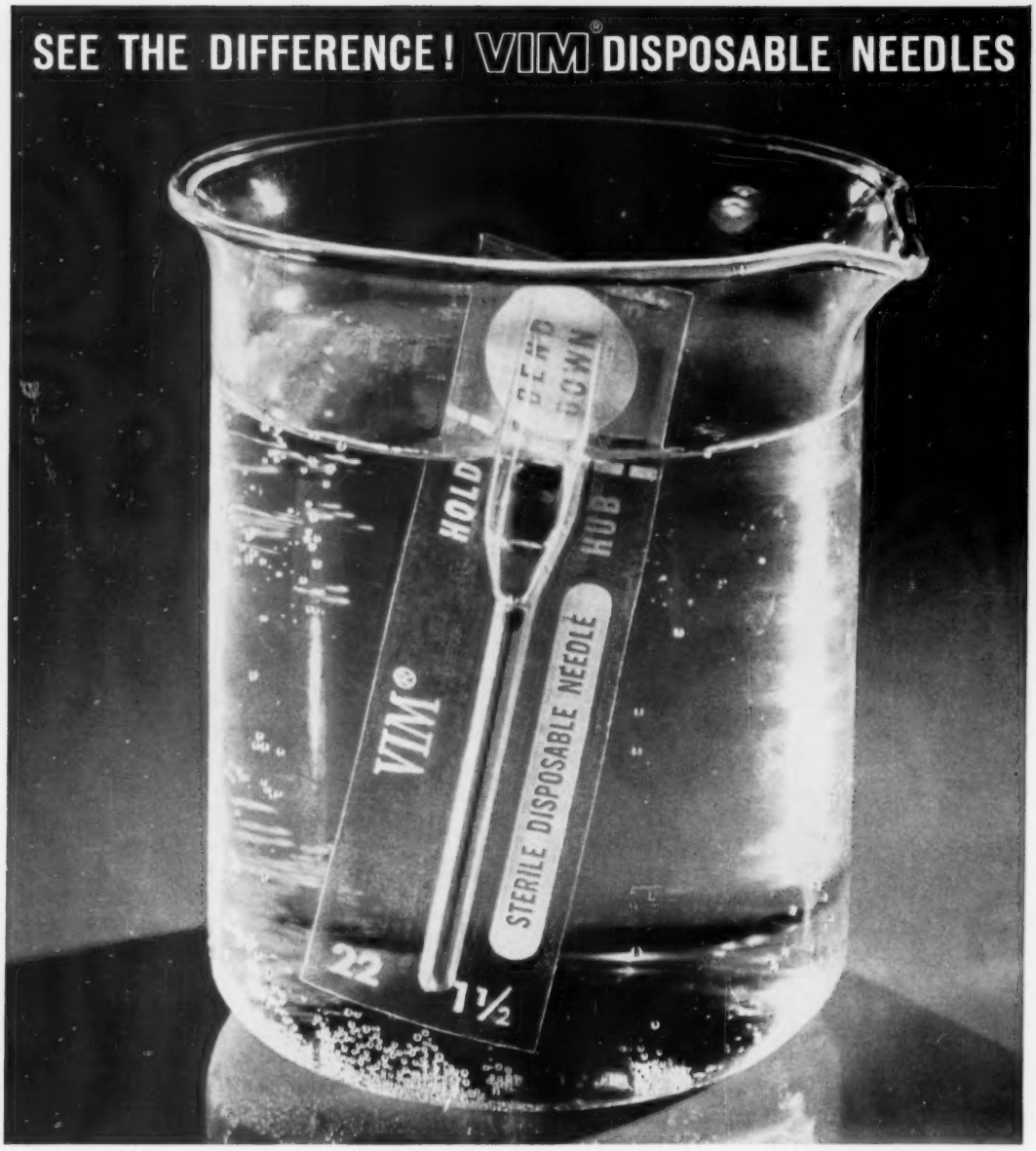
(4) Approved APC formula . . . aspirin, phenacetin and caffeine.

Professional Supplies on Request:
Ask the detail man from Whitehall Laboratories or send request on your professional letterhead to:

References: Annals of Allergy, Vol. 6. July-August 1948. Study of a New Histamine Antagonist, The Pennsylvania Med. J., Vol. 51. Clinical Study of a New Antihistaminic Drug—Phenindamine. Dristan Clinical Study.

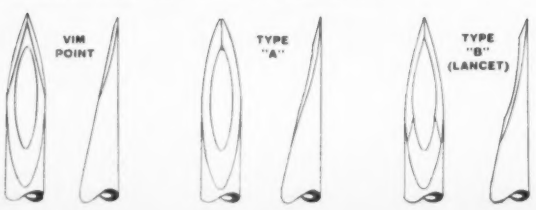
WHITEHALL LABORATORIES
22 EAST 40TH STREET, NEW YORK 16, N. Y.

SEE THE DIFFERENCE! VIM® DISPOSABLE NEEDLES



A simple test that dramatically demonstrates the superiority of Vim sterile disposable needle packaging is illustrated above. Simply immerse the Vim pack, and any others you may wish to test, in water. Unlike paper-back or spot-sealed cap-type packs, the hermetically sealed VIM all-plastic unit cannot soak up or "breathe-in" contaminants . . . assures sterility under all handling conditions.

Compare the sharp new point. Developed through exhaustive penetration and strength tests, the new VIM shorter top-side beveling (shown below) achieves optimum sharpness and strength, minimizing patient discomfort. Broad side-pointing on Type "A" and lancet type "B" cuts into lumen . . . weakens points...may cut tissue plug. Frail lancet type, in particular, may "fish-hook" in routine vial-stopper insertion or on tissue entry.



VIM Sterile Disposable Needles —meet rigid new Government specifications for use in Veterans Administration and U.S. Armed Forces Hospitals.

CYANAMID

AMERICAN CYANAMID COMPANY
SURGICAL PRODUCTS DIVISION
30 ROCKEFELLER PLAZA
NEW YORK, N. Y.

Sales Office: Danbury, Connecticut

PRODUCERS OF DAVIS & GECK SUTURES AND VIM HYPODERMIC SYRINGES AND NEEDLES

now!

disability days become functioning days with

FEMICIN®

DYSMENORRHEA**—the greatest single cause of lost women hours—**DRAMATICALLY RELIEVED

Dysmenorrhea, a complaint more prevalent than the common cold among female workers, can now be dramatically relieved with Femicin. In a single tablet Femicin brings together an exclusive combination of analgesic, antispasmodic and anti-edematous drugs designed specifically to provide symptomatic relief of dysmenorrhea. In a recent clinical study, Femicin provided relief of cramps in 80%, nervous tension in 77%, headache in 78% and bloating in 81% of patients suffering from these distresses.

You will find that with Femicin, women not only remain on the job, but do so cheerfully and efficiently—disability days due to dysmenorrhea become functioning days with Femicin. Available at all pharmacies; no Rx required.

FORMULA: salicylamide 225 mg.; acetophenetidin 160 mg.; caffeine 65 mg.; pyrilamine maleate 15 mg.; homatropine methylbromide 0.5 mg.

DOSAGE: Two tablets at the first sign of discomfort. Repeat if necessary with 1 or 2 tablets at 3-4 hour intervals. Do not exceed 6 tablets in 24 hours.

SUPPLIED: In a specially priced (one-half the retail cost) package containing 100 packets of 6 Femicin tablets for convenient dispensing. Order through your regular drug supplier or inquire direct. Generous supply of complimentary samples on request.

THAYER LABORATORIES

666 Fifth Avenue, New York 19, N. Y.

not sweet, not bitter

TESSALON®

is the tasteless cough controller

The problem of taste, which can be a hindrance to effective cough therapy, simply does not exist with Tessalon perles. There is no gagging, no refusal, no delaying, no "cheating"—because Tessalon perles provide medication enclosed in *tasteless* gelatin spheres.

Tessalon, a nonnarcotic, is 2½ times as effective as codeine.* Tessalon acts both at the sensory receptors in the chest *and* the cough centers of the medulla. Furthermore, it controls cough frequency without interfering with productivity or expectoration; sputum is usually thinner, easier to raise. Tessalon acts within 15 or 20 minutes, controls cough for 3 to 8 hours. There are no major side effects. Whether for acute or chronic cough, whether for short- or long-term therapy, Tessalon has a remarkable margin of safety. Perles insure built-in, precise dosage—no sugar or sodium to interfere with diet, no problem of nausea. Tessalon perles are easy to swallow, easy to carry in pocket or purse.

SUPPLIED: Tessalon *Perles*, 100 mg. (yellow); bottles of 100. Tessalon *Pediatric Perles* (for children under 10), 50 mg. (red); bottles of 100. *Also available* (for use when oral administration of Tessalon is precluded): *Ampuls*, 1 ml. (5 mg.); cartons of 5.

*Shane, S. J., Krzyski, T. K., and Copp, S. E.: Canad. M.A.J. 77:600 (Sept. 15) 1957.

TESSALON® (benzonatate CIBA)

CIBA
SUMMIT, N. J.

S/ 2760MK

KEEP THEM ON THE JOB WITH BUFFERIN®

Fast relief of headache and muscle-joint pains without salicylate gastric irritation

8.7% of employees to whom you give plain aspirin may return the same day with an upset stomach.* This aspirin intolerance apparently is due to the local action of aspirin.[1]

BUFFERIN with its antacid components sharply reduces the incidence of gastric intolerance while enhancing the comfort of the patient.

For fast analgesic and anti-inflammatory benefits without salicylate gastric irritation, dispense BUFFERIN.

*Based on 8.7% patient intolerance to salicylate therapy reported by Tebrock, H. E.: Ind. Med. & Surg. *20*:480-482, 1951.

1. Kelly, J. J., Jr.: Am. J. Med. Sci. *232*:119-128 (Aug.) 1956.

Bristol-Myers Company, 630 Fifth Avenue, New York 20, New York

"an ideal adjuvant
to open therapy of BURNS . . ."[1]

BETADINE™ AEROSOL SPRAY

(ACTIVE INGREDIENT: POVIDONE IODINE*)

provides iodine's microbicidal activity, yet will not sting, burn, irritate; minimizes the risk of iodine sensitization even on denuded skin areas.[1]

BETADINE AEROSOL SPRAY in burn therapy — *prevents infection, has unexcelled topical pathogenicidal activity; it avoids the discomfort and necessity of large dressings; forms a bacteria-free eschar aiding epithelization; helps reduce the loss of electrolytes and body fluids; eliminates noxious odors common to burn wounds; Betadine Aerosol Spray also aids in skin transfer procedures.*

HOW TO USE: Betadine Aerosol Spray should be applied with minimum delay over the entire injured area. Apply twice daily for first three days and once daily thereafter until separation of the eschar begins. INDICATIONS: In "prepping" procedures Betadine Aerosol Spray eliminates the hazard of microbial colony transfers, minimizes destruction of tissue, helps maintain sterile field throughout operation, covers body crevices, and saves time. SUPPLIED: Betadine Aerosol Spray: 3-oz. bottle. ALSO AVAILABLE: Betadine Antiseptic Solution: 8-oz., 16-oz., and 1-gallon bottles.

Topical pathogenicide in acute and chronic skin infections, effective against antibiotic resistant organisms, including staph. aureus.

TAILBY-NASON COMPANY, INC. *Dover, Delaware*

Pat. # 749,922 © A.H.P. Corp.

1. Garnes, A.L.; et al: Am. J. Surg. 97:48, 1959.

FREQUENTLY INDICATED FOLLOWING ACCIDENTS

PARAFLEX® FOR RELIEF OF PAINFUL MUSCLE SPASM

Chlorzoxazone®

When accidents result in sprains or strains, PARAFLEX reduces painful spasm promptly. Effective in a wide variety of rheumatic, arthritic and orthopedic disorders, PARAFLEX relieves pain, improves mobility and facilitates rehabilitation. Side effects seldom occur and are rarely severe enough to require discontinuation of therapy. □ *Average Dosage:* Two tablets t.i.d. or q.i.d. □ *Supplied:* Tablets, scored, orange, bottles of 50. Each tablet contains PARAFLEX, 250 mg.

McNEIL

*U.S. Patent No. 2,895,877

McNEIL LABORATORIES, INC · PHILADELPHIA 32, PA.

315A60

To lick a stubborn industrial problem...

AQUA IVY AP® TABLETS

for desensitization to

POISON IVY and POISON OAK

For outdoor workers one of the most annoying problems is the danger of poison ivy and poison oak. For employers the problem means absenteeism for treatment...or prophylactic injections.

Now, however, by oral prophylaxis with AQUA IVY TABLETS poison ivy and poison oak among industrial workers can be a thing of the past. And here's why:

Extensive clinical tests show that AQUA IVY TABLETS:

...**ARE EFFECTIVE** —*good to excellent results in 95% of cases tested.*[1]

...**GIVE LASTING IMMUNITY** —*patch tests show immunity continues up to 12 months.*[2]

...**ARE SAFE**—*no sensitization, flare-up of existing lesions or gastro-intestinal irritation. Proved suitable for children.*[1-4]

Protection established before outdoor work begins

Because immunization procedures require a build-up period, AQUA IVY TABLETS are taken in advance of the season to be sure of protection when needed. Many experience benefits after 100 tablets sufficient to provide summer-long immunity. This requires about 8 weeks of tablet taking as directed. Others will require the dosage up to 200 tablets.

To assure your workers of protection against poison ivy and poison oak this season—put them on AQUA IVY TABLETS now! You'll see a big difference in absenteeism and in general outdoor working efficiency once the fear, pain and inconvenience of poison ivy or poison oak dermatitis is removed.

AVAILABLE: *bottles of 1,000, 300 and 100 tablets, supplied through usual drug channels.*

REFERENCES:

1. Langs, R. J. and Strauss, M. B.: J. Allergy. 30: 130-139 (March-April), 1959.
2. Langs, R. J., Fuchs, A. M., and Strauss, M. B.: Indus. Med., 28: 6, 257-261 (June); 1959.
3. Kligman, A. M.: J.A.M.A., 171: 592, (Oct. 3) 1959.
4. Personal Communications.

For free illustrated booklet "Facts You Should Know About Poison Ivy and Poison Oak" write Dept. IM

SYNTEX CHEMICAL COMPANY, INC.

10 East 40th Street, New York 16, N. Y.

NOW a truly definitive answer to an ever-present problem

Tassette®

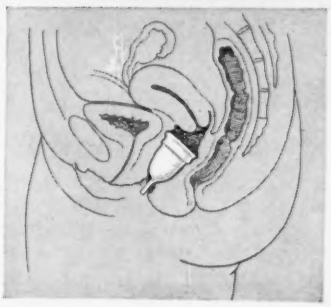
the safe and sanitary menstrual cup

You can prescribe Tassette with full assurance that your patient will find a safe, effective and completely acceptable answer to her menstrual control problem. *Tassette*, made of soft pliable rubber fits anatomically at the mid point of the vaginal wall and acts as a catch basin for the menstrual flow (see anatomical drawing). It is easily folded, needs no inserter, and can be simply emptied and replaced as needed. Tassette requires no measurements or fitting, and can be worn with complete comfort at all times.

Tassette permits your patient to swim, dance and engage in any activity because it catches the flow and seals it off completely. Thus there is no odor or possibility of leakage or staining as may occur during periods of heavy flow when tampons are used. There is no danger of chafing, irritation or infection, and no belt is required, as with ordinary sanitary napkins.

Tassette has many medical applications other than its use as a menstrual cup. During the intermenstrual period it provides the most satisfactory and safe method for collecting vaginal, cervical or uterine secretions for diagnostic purposes. Tassette has also been used to insure against leakages in vesico-vaginal fistula.

Modern internal menstrual control is now accepted by the medical profession and Tassette is widely recommended by gynecologists in place of sanitary napkins and tampons. In order to acquaint you with Tassette this special offer is made: Send $3.50 (reg. price $4.95) for one Tassette with complete directions, postage prepaid. Tassette guarantees satisfactory use for two years or your money back.



Mail this coupon with cash, check or money order to

TASSETTE, INC.
170 Atlantic Square
Stamford, Conn.

☐ Cash
☐ Check
☐ Money Order

Please send me_____ Tassettes. Enclosed is $_____

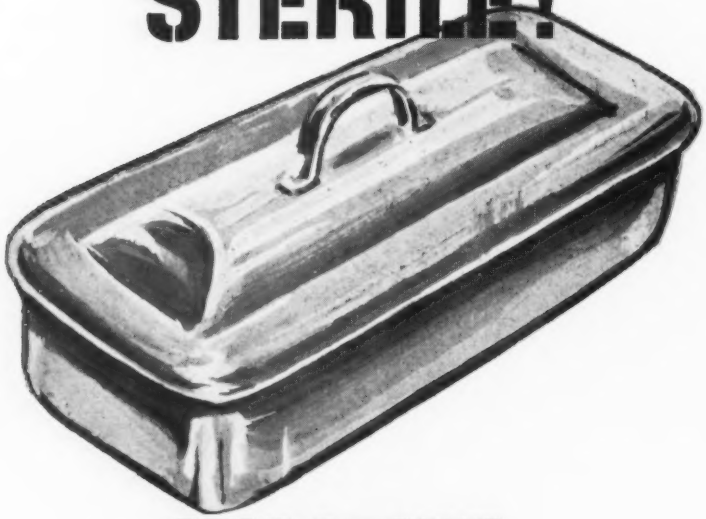
Name _____

Street _____

City_____ State_____ Zone_____

Dept. M. 5

'TiS STERiLE!



'TAiN'T STERiLE!

The nice old lady who scored her pie crusts "TM" and "TM" ('Tis or 'Tain't Mince) never knew which was which. So it is with "homemade" petrolatum gauze...there's always the question of sterility. That's why most hospitals specify 'Vaseline' Sterile Petrolatum Gauze U.S.P. This label insures the absolute sterility that is difficult to attain in hospital-made gauze.

Available in 6 sizes

IN DISPOSABLE PLASTIC TUBES

½" x 72" selvage-edged strips, 6 to box

IN HEAT-SEALED FOIL ENVELOPES

3" x 3" pads, open to 3" x 9" strips, 6 to box
1" x 36" strips, 6 to box
3" x 18" strips, 6 to box
3" x 36" strips, 6 to box
6" x 36" strips, 6 to box

PROFESSIONAL PRODUCTS DIVISION
Chesebrough-Pond's Inc., New York 17, N. Y.

VASELINE® STERILE PETROLATUM GAUZE

'TiS STERiLE!

90% of anxious, agitated and apathetic office patients calmed without drowsiness and with normal drive restored...

on one or two 0.25 mg. tablets b.i.d.:

This is the pattern of performance for

PERMITIL®

Fluphenazine dihydrochloride

■ In 608 patients with anxiety and anxiety-induced fatigue or depression, PERMITIL, administered in small daily doses of 0.5 mg. to 1 mg., produced significant improvement in 90%.*

■ PERMITIL is virtually free from side effects at recommended dosage levels.

■ Patients become calm without being drowsy and normal drive is restored.

■ Onset of action is rapid; effect is prolonged. ■ PERMITIL does not potentiate barbiturates or non-barbiturate sedatives and can be used with impunity with such agents.

How to Prescribe PERMITIL: The lowest dose of PERMITIL that will produce the desired clinical effect should be used. The recommended dose for most adults is one 0.25 mg. tablet twice a day (taken morning and afternoon). Increase to two 0.25 mg. tablets twice a day if required. Total daily dosage in excess of 1 mg. should be employed only in patients with relatively severe symptoms which are uncontrolled at lower dosage. In such patients, the total daily dose may be increased to a maximum of 2 mg., given in divided amounts. Complete information concerning the use of PERMITIL is available on request.

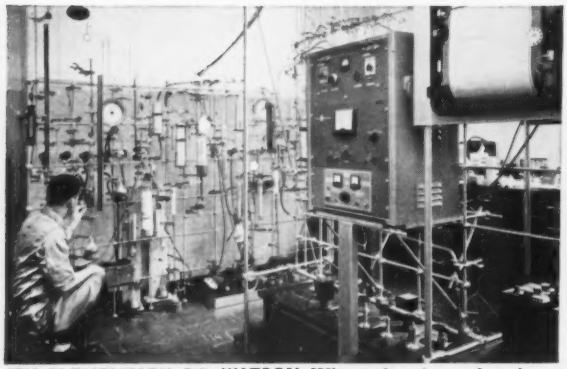
Supplied: Tablets, 0.25 mg., bottles of 50 and 500.

*Recent compilation of case reports received by the Medical Department, White Laboratories, Inc.

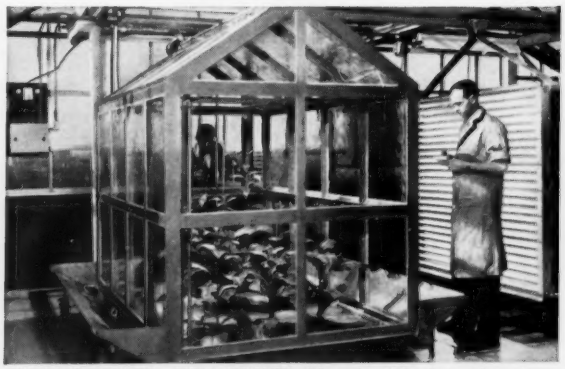
White WHITE LABORATORIES, INC., *Kenilworth, New Jersey*

MEET THE SHREWDEST "PRIVATE EYES" IN THE BUSINESS

When it comes to getting the low-down on fine tobacco, nothing outsmarts these ingenious machines at the American Tobacco Research Laboratory

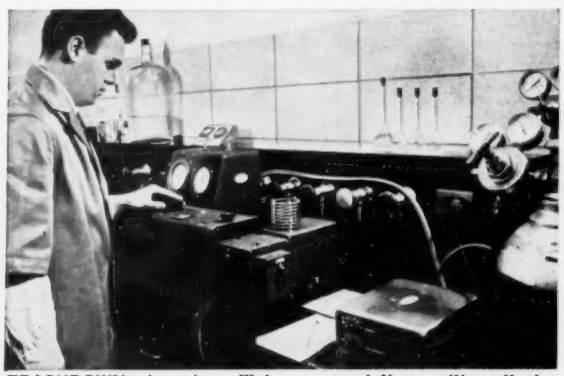


IT'S ELEMENTARY, DR. WATSON: Where there's smoke, there are volatile constituents that affect taste. To study them, American Tobacco researchers condense smoke vapors, distill, collect and separate components with the complex apparatus shown here.

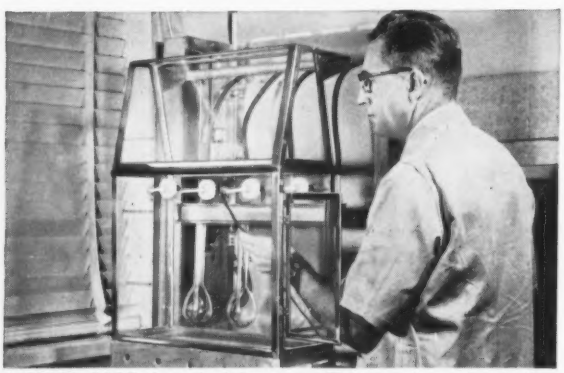


HAVE ISOTOPES—WILL TRAVEL: No scientific detective story is complete without radio isotopes. American Tobacco has pioneered in radiological studies of tobacco. In this new, ultramodern laboratory, such studies as raising tobacco in a radioactive CO_2 atmosphere are conducted for test purposes.

THE HEAT'S ON: To answer such vital questions as the temperature and the combustion products formed at the burning zone in tobacco, the research laboratory is equipped with X-ray equipment (left), tobacco-burning equipment (center) and temperature-recording device (right).



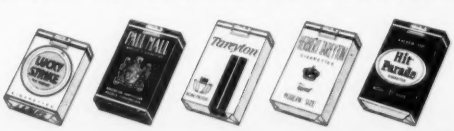
TRACKDOWN: American Tobacco specialists utilize all the important analytical instruments now available to test and examine tobacco and materials used in tobacco. Here, in one of countless tests, a flame photometer determines mineral constituents of tobacco.



A SOLID CASE: A typical American Tobacco invention is the cigarette-smoking machine, now widely used throughout the industry. The machine collects nicotine and smoke solids on a filter. Scores of tests have been developed to examine the collected solids.

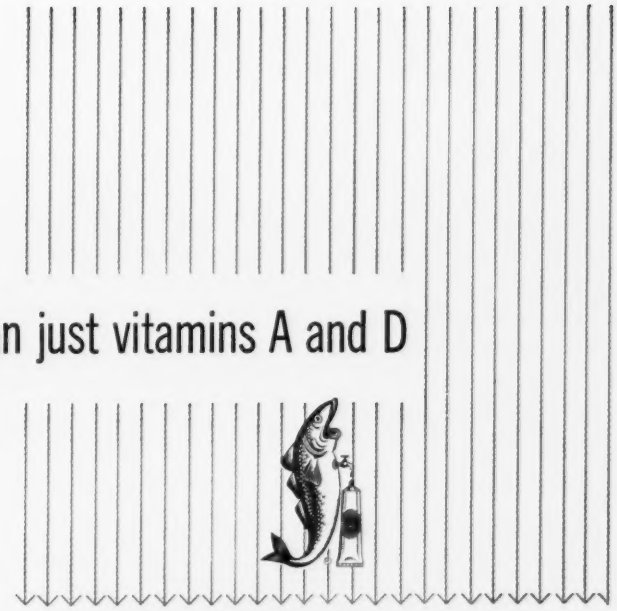
The American Tobacco Company

FIRST IN CIGARETTE RESEARCH



©A. T. Co.

more than just vitamins A and D



DESITIN® ointment

also provides
unsaturated fatty acids as well as the vitamins A and D (of high grade Norwegian cod liver oil)—essential to skin health and integrity

and ingredients that are emollient, lubricant, gently astringent, protective, and aid tissue repair (zinc oxide, talcum, petrolatum and lanolin)

in a smooth creamy ointment so processed that one application of Desitin soothes, protects, and promotes healing for hours in...

- **traumatic and infectious wounds**
- **burns (first, second, third degree)**
- **pressure sores and ulcers**
- **pilonidal cysts and sinuses**
- **ano-rectal wounds** • **chest wounds**

Samples Please write... **DESITIN CHEMICAL COMPANY**
812 Branch Avenue, Providence 4, R. I.

Relief from moderate postoperative pain

DARVON® COMPOUND

(dextro propoxyphene and acetylsalicylic acid compound, Lilly)

effective · safe · well tolerated

The clinical usefulness of Darvon®, alone and in combination, has been confirmed by more than a hundred investigators in the treatment of over 6,300 patients. Under study were patients from every branch of medicine.

For example, 361 surgical patients received medication containing Darvon following major and minor surgery and in the emergency ward after surgical procedures. Of these, 274 (76 percent) obtained effective analgesia.

Darvon Compound combines the analgesic action of Darvon with the antipyretic and anti-inflammatory benefits of A.S.A.® Compound.

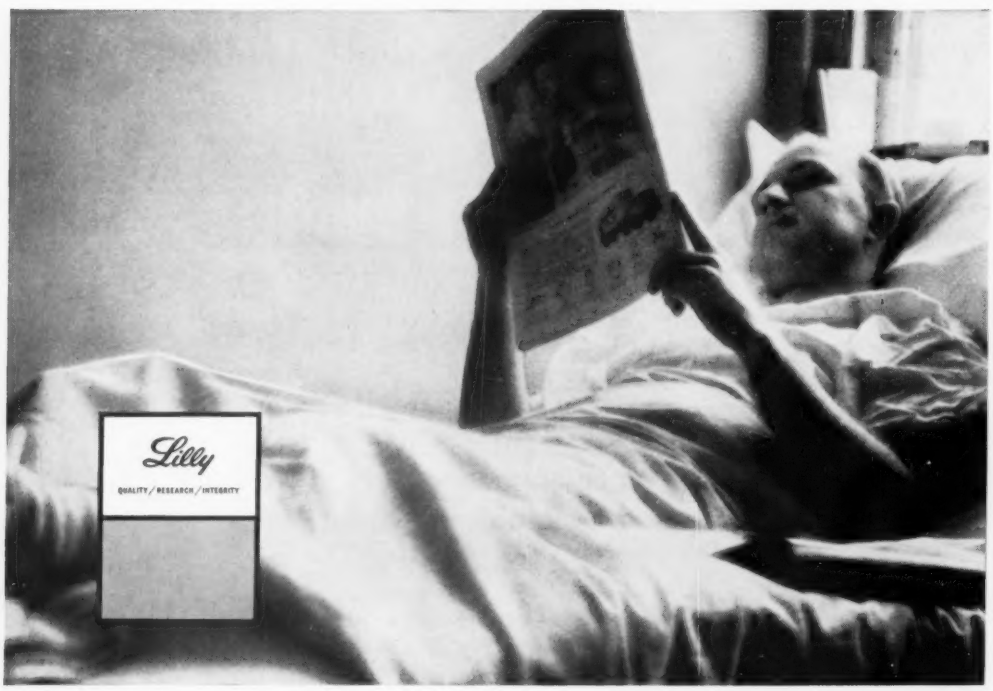
Usual dosage: 1 or 2 Pulvules® three or four times daily.

Also available: Darvon, in 32 and 65-mg. Pulvules.
Usual dosage: 32 mg. every four hours or 65 mg. every six hours.

Darvon® (dextro propoxyphene hydrochloride, Lilly)
A.S.A.® Compound (acetylsalicylic acid and acetophenetidin compound, Lilly)

ELI LILLY AND COMPANY • INDIANAPOLIS 6, INDIANA, U.S.A.

020212



IMS

Diagnosis of Paralysis Following Surgical Procedures

• A. A. MARINACCI, M.D.
Los Angeles, California

In litigation, the surgical procedure often is blamed for ensuing paralysis or muscular weakness. However, of ten specific etiological factors which have been found to be responsible for the apparent neurological complications, only two are directly related to the surgery.

The sudden onset of muscle weakness is always of concern to the patient. He is apt to conjure up the spectre of a "stroke" with its dramatic consequences. When this symptom is associated with a surgical procedure, it is apt to raise the question of whether it is somehow a complication of the operation. If the surgeon has no satisfactory explanation for this situation, the patient's anxiety is accentuated, and if at all "compensation minded," it is not unusual for the patient to reason along the lines of *propter hoc ergo — hoc*; because it has become apparent after the operation, it was caused by the operation.

The writer[1] has been obliged to study a considerable number of these problems, and being concerned in so many of them with the legal implications as well as their medical management, presents here some helpful principles in diagnosis and management. These helpful principles have been evolved with the aid of the electromyogram. One feature that becomes apparent in these cases is that the complication is not always what it seems and often a simple investigation of available evidence makes the diagnosis a simple matter. As a starting point in this discussion, it seems advisable to classify these cases on the basis of their actual causes. These troublesome cases have fallen into 10 causative groups as follows: (1) older pre-existing causes of paralysis, (2) neuropathies occurring immediately before surgery, (3) nerve injuries resulting directly from the surgical procedure, (4) complications of anesthesia, (5) pressure neuropathies such as incident to positioning of the patient on the operating table or while in bed in a postanesthetic state, (6) traumatic neuropathies in the immediate convalescent period, (7) neuropathies, often infectious (virus), during the convalescent period,

(8) pressure neuropathies occurring weeks after prolonged convalescent period either in the hospital or at home, (9) paralysis of an extremity due to actual traumatic intramuscular injection in the hip, and (10) hysterical paralysis. Each of these possible causes as well as the time in which they are apt to occur will be considered in the following sections. Attention will also be given to some factors which will detect the preoperative neuropathies and also the steps to take when these neuropathies manifest themselves in the postoperative state. The use of the electromyogram will also be considered in the differential diagnosis of the variable causes of postoperative paralytic phenomena.

Older Pre-Existing Causes of Paralysis

There are many long standing causes of paralysis, either subclinical or clinical, of the lower motor neuron. In children[2] it may be the preexistence of a Bell's palsy, Erb's paralysis, anterior poliomyelitis, peripheral neuritis or muscular weakness owing to myotonia or muscular dystrophy. Before surgery, one should make a very careful survey in children for any existing weakness, whether clinical or borderline weakness or paralysis. Such information should go on the patient's chart so it will not be brought to the attention of the surgeon by the parents following the surgical procedure.

Case 1: Following tonsillectomy, the parents of a 12-year-old girl complained that they noted weakness of the left side of the face. On examination, there was some evidence of a left Bell's palsy. On the third postoperative day, an electromyogram revealed the presence of partial old left seventh cranial nerve involvement. These changes consisted of denervation and giant motor units, the presence of which indicated the lesion was one of long standing.

Comment: If the Bell's palsy had been related to the surgical procedure, such denervation would not have become apparent until 18 to 21 days following the surgery. However, since there were changes present on the third postoperative day, it presumed the pre-existence of the lesion. Further history indicated that the child had had an ear infection on the left two years prior to the tonsillectomy. Apparently the left facial weakness was overlooked before surgery. The child's grandmother, however, thought the weakness had been present for a long time. This case indicates that one should make a careful survey of the peripheral nerves before any type of surgery is undertaken. In spite of the statements made by the patient's grandmother referable to the weakness of the left side of the face, a suit was filed and a modest monetary settlement was made because no record was made on the patient's chart of the left facial weakness prior to the surgery.

In adults, first of all, one finds with the aid of the electromyogram that 0.5 of 1% of the normal population has subclinical myotonia and subclinical progressive spinal muscular atrophy. Any incidental muscular spasms or weakness caused by these subclinical or borderline conditions may have not registered in any degree on the consciousness of the patient. However, experience reveals that these subclinical or borderline conditions have become greatly amplified in the mind of the patient following the surgical procedure. Such procedures have subsequently been incriminated as the actual cause of muscular weakness and muscle spasms. This also applies to radiation of pain in the cervical or lumbar regions,[4] such radiculitis having been amplified or brought to the attention of the patient for monetary reasons following surgery. Consequently the patient has alleged that the radiating pain was the result of the surgical procedure.

Case 2: Following rectal surgery under spinal anesthesia, a 45-year-old male noted pain radiating into the left lower extremity. A neurological examination revealed no positive clinical signs, but the electromyogram revealed moderate involvement of the left L5 nerve root on both the third and twenty-first postoperative days. The patient alleged that the radiating pain was a direct result of the spinal anesthesia.

Comment: Because the electromyographic changes were present on the third postoperative day, it indicated that the fifth lumbar nerve root involvement existed prior to the operative procedure. The patient finally admitted that there had been previous attacks of low back pain with some radiation into the left leg. It was fortunate that the electromyogram was taken immediately and repeated on the twenty-first postoperative day, for in this way it was verified that the condition was pre-existent. If such changes actually had been the result of the surgery, they would not have been detected until 18 to 21 days after the operation.

Muscular weakness or some degree of paralysis owing to an old anterior poliomyelitis, old nerve injury, muscle spasms due to myotonia[5] or progressive spinal muscular atrophy as well as recurrent attacks that would suggest multiple sclerosis or attacks of peripheral neuritis must be investigated and noted on the patient's record before surgery is done. If found to be present before surgery, such conditions are frequently amplified after surgery is done, and aggravation of pre-existing muscular weakness or paralysis has been alleged by these patients. Therefore, the surgeon must explain to the patient any

unforeseen aggravation of the existing motor deficit during the period prior to the operation, regardless of how trivial such a possibility may appear to the surgeon. These cases are always potential medicolegal problems. The jury has been very sympathetic towards this group of patients with preoperative paralytic states. It is natural for a lay jury who observes the paralysis after surgery to assume the likelihood that such paralysis was aggravated or even caused by the operation.

Neuropathy Occurring Immediately before Surgery

In many cases a neuropathy occurs before the patient comes to the hospital but does not become manifest until after the operation has been done. These neuropathies are often alleged to be the result of the surgery while in reality these conditions had their inception prior to admission to the hospital. This type of neuritis falls into two specific groups, (1) infectious, and (2) traumatic. Most of the infectious neuropathies[6] are viral in origin, the incubation period of which takes place prior to admission to the hospital, but the paralysis of which does not appear until after surgery has been done. The most common are an infectious neuronitis or polyneuritis (often with an associated Guillain-Barre syndrome in the spinal fluid). In some instances, infectious neuronitis[7] has two phases, the sensory and the motor. Sensory phenomena have in some cases simulated major surgical conditions while the motor aspect, appearing after surgery, simulates a complication either of the surgical procedure itself or that of the spinal anesthesia.[10]

Case 3: A 54-year-old-man complained of weakness of both legs two days after a cholecystectomy. The muscular deficit assumed an ascending trend. By the fifth day, he was paralyzed in both legs. One consultant went on record as saying that the paralysis was the probable result of spinal anesthesia. On the sixth postoperative day, the electromyogram showed denervation activity in both lower extremities as well as in the pelvic girdle, all the paraspinal muscles, in the periphery of the upper extremities and the facial muscles as well. The findings were typical of infectious neuronitis. Another electromyographic survey three weeks after surgery revealed the condition to be unchanged.

Comment: Fortunately in this case, the electromyogram was taken immediately and revealed that the condition pre-existed the surgery and was consistent with infectious neuronitis. There was no loss of sphincter control at any time. If the patient's paralysis had been the result of spinal anesthesia, the electromyographic changes would not have been present until some three weeks after the actual date of surgery. It would also have been restricted to the distribution of the cauda equina (low back and both lower extremities). With the aid of the electromyogram, the correct diagnosis and a favorable prognosis were presented to the patient. The fear of a stroke or permanent paralysis as a possible complication of spinal anesthesia was ruled out. The patient made a good recovery.

Pressure neuropathy or "Saturday night paralysis" may likewise occur before the patient is admitted to the hospital. While he is in pain at home, sedation may be given. Overindulgence in alcohol may result in this type of pressure neuropathy. These neuropathies have been observed to take place at the middle of the arm as the patient hangs the arm over the chair pressing on the median, radial and ulnar nerves (triad neuropathy) at that level. The median nerve is usually most affected. The next most common pressure neuropathy occurs while the patient hangs the leg over the side of the bed causing injury to the sciatic nerve. The third most frequent pressure neuritis involves the radial nerve at the radial groove of the humerus resulting in wrist drop. Pressure on the ulnar nerve at the elbow and the peroneal nerve at the head of the fibula as well as pressure on the tibial nerve at the popliteal fossa are also rather frequent.

Case 4: A 36-year-old woman was found unconscious at home and was brought to the hospital for treatment of induced abortion. Proper surgical treatment was instituted. On regaining consciousness, the patient noted a left wrist drop and alleged it was the result of faulty administration of an intravenous glucose in the antecubital fossa. An electromyogram three weeks after surgery revealed partial involvement of the left radial nerve at the radial groove of the humerus.

Comment: With the aid of the electromyogram it was found that the level of the lesion was at the radial groove and not in the antecubital fossa as alleged by the patient. The lesion was actually far above the alleged level. The admitting nurse noted the left wrist drop when admitting the patient, but no record was made on the chart. The most probable cause of the lesion was a "Saturday night paralysis" occurring at home while the patient was unconscious. Nevertheless a small settlement was made on the basis that no record had been made on the patient's chart of the pre-existing paralysis.

Here again we have an example that a careful survey of the peripheral nerves should be made when the patient is admitted; especially of those patients who are unconscious.

Cases of toxic plexitis have also been encountered following surgery. One of the most troublesome is horse serum plexitis or horse serum neuropathy.[8] Owing to the fact that the neuropathy appears about eight days after administration of the tetanus antitoxin, this latent period tends to create a medicolegal situation. If surgery is done one or two days before onset of the muscular weakness, the patient naturally believes that his paralysis is a result of the surgery.

Case 5: A 19-year-old female sustained a deep laceration of the right wrist at work. Tendon repair was done five days after the accident. Paralysis of the left upper extremity was noted two days after repair of the tendons of the wrist. It was assumed that the paralysis was due to stretching of the left brachial plexus while the patient was on the surgical table. Four weeks after the surgery, the patient was referred for an electromyogram. Clinically there was atrophy of the left shoulder girdle and arm, but none in the forearm or hand. The patient was unable to abduct the left arm. She alleged that the paralysis was a consequence of the surgery since the left arm had been outstretched during the operation and concurrent intravenous administration of sodium pentothal. The electromyogram revealed widespread changes in both shoulder girdles and upper extremities, but the changes were more marked on the left. No electromyographic changes were recorded from the axial musculature.

Comment: Usually a horse serum neuropathy presents a focal clinical picture while the electromyographic findings are always widespread. Clinically this patient presented a picture of stretching of the upper trunk (Erb's paralysis) of the left brachial plexus which would have been consistent with an isolated traumatic lesion.

On the other hand, if an isolated Erb's paralysis existed, the elctromyographic changes would have been confined only in the supra-infraspinatus, deltoid, biceps and brachioradialis. The electromyogram therefore was able to differentiate a local neuropathy from a toxic reaction. Moreover, a horse serum plexitis usually results in an eventual full recovery which was true with this patient. In the case of Erb's paralysis, the prognosis is not as favorable. The tetanus antitoxin which was given at the first aid station was forgotten when the patient was later admitted to the hospital. It was the electromyographic findings which brought to the attention of the attending physician the fact that such paralysis could only be the result of an infectious plexitis or a reaction to horse serum.

Nerve Injury Resulting Directly from Surgical Procedure

Muscular weakness or actual paralysis of one extremity can occur during, and as a direct result of, a general surgical procedure. However, this is rare. Only five cases have been observed in this category. One patient suffered actual severance of the radial nerve at the radial groove of the humerus during open reduction of a multiple compound fracture of the humerus. Another patient suffered damage to the femoral nerve[9] at the level of the groin during femoral hernia repair. Three other patients sustained an injury of the femoral nerve as a result of pressure by retractors during hysterectomy.

Case 6: A 55-year-old female noted paralysis of the right leg on regaining consciousness following subtotal hysterectomy under spinal anesthesia. This was interpreted as a complication of the spinal anesthesia. An electromyogram was ordered on the third postoperative day. No denervation activity was found. Normal motor units were recorded in the paraspinal muscles from L1 through S5 bilaterally, in the gluteal group and both lower extremities with the exception of the right quadriceps from which only one or two motor units were recorded under extreme voluntary efforts but no denervation activity was recorded. On the fifteenth postoperative day, another electromyogram showed the beginning of fibrillation of denervation, and on the twenty-fourth postoperative day the electromyogram showed a considerable amount of fibrillation with a few motor units detected during voluntary efforts. The adductors were normal denoting that the obturator nerve was intact. The electromyographic findings were consistent with severe partial right femoral nerve involvement and it was presumed to be the result of pressure by a retractor on the pelvic surgery. After eight months, the patient had fully recovered.

Comment: At the beginning, the electromyogram in this case was able to demonstrate with certainty that the paralysis was not the result of a complication of the spinal anesthesia since impulses were coming through normally in the paraspinal muscles, pelvic girdle and both lower extremities, with extremely diminished impulses in the right quadriceps denoting a defect existent only in that nerve. However, the degree of damage could not be ascertained until 18 to 21 days after the onset of the paralysis as Wallerian degeneration is not complete until this period of time has elapsed. Because the physician was able to explain the possible causes of her condition, and to give a favorable prognosis, the patient did not bring medicolegal

action. This case demonstrates the importance of proper diagnosis and accurate prognosis in avoiding legal action rather than presenting many speculative diagnoses which create an antagonistic attitude on the part of the patient.

Complications of Spinal Anesthesia

This subject has been covered in detail elsewhere.[10] It suffices to say that it has been our experience that out of thousands of patients who have had spinal anesthesia, only rarely does one develop neurological complications. Nevertheless, the possibility of such a calamity has created among the laity an unstable emotional state which manifests itself whenever this form of anesthesia is followed by any type of muscular weakness or paralysis. For this reason it is not uncommon for such individuals to assume that the spinal anesthetic is directly responsible for the development of any directly consequent neurological manifestation. Up to this time, 503 patients whose neurological complaints seemed to have some merit were critically investigated. True complications of spinal anesthesia were found in only four patients of this group. In the remaining 499 patients, the neurological complications were due to some other concurrent and entirely unrelated conditions. Nevertheless, these conditions had imitated the actual complication of the spinal anesthetic agent. In the majority of instances, the causative disease proved to be either a concomitant infectious neuronitis or peripheral neuropathy.

In true complications resulting from spinal anesthesia, muscular paralysis of both lower extremities persists after the effects of the spinal anesthetic have worn off and there is an associated loss of sphincter control. If laminectomy is done after a suitable interval one finds definite evidence of arachnoiditis. The electromyogram taken immediately or within the first week after the surgery reveals no motor units in the paraspinal muscles from L1 through S5, none in the pelvic girdle, thighs, legs or feet. No denervation activity will as yet be recorded. Normal activity will be present in the muscles of the face, upper extremities and the paraspinal muscles from C1 through C8 and T1 through T12. On the twelfth postoperative day one begins to detect some denervation in the paraspinal muscles from L1 through S5, and about the fifteenth day some denervation will be present in the muscles of both legs. On the twenty-first postoperative day, a large amount of denervation will be found in the paraspinal muscles from L1 through S5 and all the muscles of the lower extremities which are supplied by these nerve roots. These findings indicate a true involvement of the cauda equina resulting from the spinal anesthetic agent. Nevertheless, these findings are not pathognomonic of complications following spinal anesthesia for the identical findings were also found to be present in four patients who had spontaneous paralysis not related to the surgery or spinal anesthesia. Therefore, if by chance any of these four patients had had a surgical procedure under spinal anesthesia, the anesthetic agent would naturally have been incriminated. One wonders if what appears to be a true complication of spinal anesthesia is actually such a lesion as this occurring as a pure coincidence. On the other hand, the most outstanding simulators have been found to be an infectious neuronitis. The findings in these conditions are widespread and are found in the muscles of the face, all four extremities as well as the paraspinal muscles; that is, there will be no evidence of a segmental lesion. In mononeuropathy, simulating complications of spinal anesthesia such as involvement of the femoral or sciatic nerves, one finds denervation restricted to the group of muscles supplied by the affected nerve but without changes in the paraspinal muscles. It is important that the electromyogram be taken as soon as the muscular weakness becomes apparent. If denervation activity is found immediately or soon after the spinal anesthesia, it presumes the pre-existence of some other disorder.

Pressure Neuropathies Occurring on the Operating Table or in the Postanesthetic State

Pressure neuropathies such as incident to positioning of the patient on the operating table[11] or while in bed in a postanesthetic state have been observed. The most common injuries resulting from positioning of the patient on the surgical table is involvement of the radial or ulnar nerves in the upper extremities and the sciatic, peroneal and tibial nerves in the lower extremities. On the other hand, stretching of the brachial plexus or traumatic paralysis or damage to a nerve during administration of an intravenous also have been alleged. However, the writer has not found any true nerve complications under these circumstances. Pressure neuropathy while on the surgical table or while being transferred from the table to his bed or during the convalescent period, however, occasionally have been encountered. In the writer's experience, during the recovery period, the nerve affected most commonly has been the ulnar nerve at the elbow or at the wrist. This is usually the result of pressure incident to hanging the upper extremity over the side rail. Pressure neuropathy of the median nerve at the arm, elbow or wrist also has been observed. In the lower extremities, injuries may involve the sciatic

nerve at the gluteal fold, or the tibial nerve at the popliteal fossa resulting from hanging the lower extremity over the side of the bed. Allowing the leg to lie in extreme abduction against the side rails of the bed may cause pressure on the peroneal nerve at the head of the fibula.

The writer has also observed two cases of stretching of the obturator nerve which were considered to be the result of pulling on the patient's leg when transferring the patient from the stretcher to his own bed while he was still under the anesthetic. The writer has seen two additional cases wherein the patient hung the leg over the bed with pressure on the sciatic nerve at the middle of the thigh and at the same time produced stretching of the femoral nerve. This particular situation creates a medicolegal situation in that it simulates complications of spinal anesthesia or nerve injury at the site of the operation.

Case 7: During the recovery period from pelvic surgery, a 45-year-old female was found with her left leg hanging over the side of the bed. Paralysis of the extremity raised the question of spinal anesthesia complication and even cutting of the lumbosacral plexus. An electromyogram four weeks after surgery revealed the paraspinal muscles from L1 through S5 to be normal. Partial denervation was found in all the muscles of the left femoral and left sciatic nerves from the level of the gluteal fold distally.

Comment: With the aid of the electromyogram a specific diagnosis was made — a partial left femoral nerve and partial left sciatic nerve involvement at the gluteal fold. The lesion was not in the pelvis since the obturator and the superior and inferior gluteal nerves were normal. Complications of spinal anesthesia were ruled out since only two peripheral nerves were involved rather than the cauda equina. It was apparent that the patient had suffered a pressure neuropathy of the sciatic nerve and stretching of the left femoral nerve. Because of the electromyographic findings a favorable prognosis was predicted and the patient was thereby relieved of the apprehension of a stroke, cerebral embolism and complications of spinal anesthesia which had been suggested by other examiners.

Traumatic Neuropathies of the Immediate Convalescent Period

In the first few days after the patient regains consciousness and he becomes ambulatory, certain traumatic neuropathies have been observed to develop. Because the time at which they occur so closely follows the operation, the patient tends to allege that the surgery was the cause of the muscular weakness or paralysis. For example, on walking he may fall and dislocate his shoulder resulting in stretching of the brachial plexus. If there is posterior dislocation, only the axillary nerve will be involved, creating inability to abduct the arm. If the dislocation is anterior, stretching of all three cords of the brachial plexus takes place. Nevertheless, the resultant trauma to the brachial plexus secondary to dislocation of the shoulder has been alleged to be a delayed result of stretching during surgery. A few cases have been examined wherein the patient had gone to the bathroom and slipped backward stretching the femoral nerve.

Case 8: A 52-year-old female had pelvic surgery and on the second postoperative day she was able to move both lower extremities. On the third postoperative day, however, the patient complained of paralysis of the left lower extremity which was not noted previously. It was alleged that the surgeon had accidentally placed a suture around the lumbar plexus or had actually cut the nerves. One consultant suggested that her complaints indicated a reaction to spinal anesthesia while still another expressed the opinion that damage to the lumbosacral plexus had occurred during surgery. An electromyogram three months after surgery revealed normal activity in the paraspinal muscles and both lower extremities with the exception of partial involvement of the left femoral nerve with evidence of regeneration. The obturator nerve was intact. Subsequently the patient made a satisfactory recovery.

Comment: After the first electromyogram, the patient had an abdominal exploration and a second surgeon recorded that he found some suture material around the femoral nerve. The patient brought legal action against the first surgeon, and although she had fully recovered from the weakness, a moderate settlement was made.

The difficulty with this case was that too many speculative diagnoses were made and recorded on the chart before arriving at a correct diagnosis. If the electromyogram had been done immediately after the surgery or within the first week, all these speculative diagnoses would not have been recorded on the chart. It was the variation in diagnoses, ranging from hysteria to accidental section of the nerve or complications of spinal anesthesia, which antagonized the patient and produced an emotional state which led her to seek legal as well as further medical advice which led to the second surgery. In conclusion, the patient had stretching of the left femoral nerve as a result of the fall in the bathroom on the third postoperative day. It was for this reason she

had an uneventful recovery, which would not have been the case had the femoral nerve been cut or interrupted by a suture as was alleged. In addition, if the lesion had been the result of the surgical procedure, the patient would not have been able to walk from her bed to the bathroom on the third postoperative day.

Infectious Neuropathies Occuring during the Convalescent Period

Many cases of infectious neuronitis producing muscular weakness or paralysis have been observed immediately after surgery. Occasionally, however, a patient has been observed in whom the paralysis incident to infectious neuronitis did not become apparent until after he was discharged from the hospital. Nevertheless, muscular weakness or paralysis was assumed to be a delayed result of surgery or even the complications of spinal anesthesia. Toxic neuritis resulting from certain drugs may likewise not become manifest until after the patient has been discharged from the hospital. However, the infectious neuronitis presents the most troublesome problem because, when its paralytic manifestations involve the lower extremities, it presents a perfect imitation of the neurological complications of spinal anesthesia.

Case 9: A 28-year-old male presented signs of a typical radiculitis owing to a lesion of the fifth lumbar nerve root on the left. This was consistent with the electromyographic changes. A laminectomy was performed on January 2, 1959, following which the patient made an uneventful recovery. He was discharged from the hospital on January 9, 1959. On January 19, 1959, he began to have slight muscle spasm in the left calf and in the next few days these spasms progressed upward to the thigh and left gluteal region. Finally both legs began to feel heavy and the patient noted generalized weakness with some nausea. He was readmitted to the hospital on January 29, 1959, with paresis of the lower extremities. At no time was there loss of sphincter control. His condition was interpreted as hysterical paralysis by one clinician while another thought the patient suffered a delayed reaction to the spinal anesthesia. An electromyogram two days after admission revealed the typical findings of a virus neuronitis. Electromyographic changes were also recorded from the muscles of the face, all the paraspinal muscles and all four extremities, with more denervation present in both lower extremities.

Comment: In this patient the infectious neuronitis (polyneuritis) appeared after the patient was discharged from the hospital, but nevertheless a complication of spinal anesthesia was considered to be the cause. Without the aid of the electromyogram it would be difficult clinically to distinguish between true complications of spinal anesthesia and its simulators. In cases of spinal anesthesia reaction, the electromyographic changes would be restricted from about L1 downward. No changes would be found above this level. This patient eventually made full recovery.

Pressure Neuritis Occurring after Prolonged Convalescent Period

Many pressure neuropathies can occur during a prolonged convalescent period. The most common cause is pressure on the ulnar nerves at the elbows consequent to habitual reading either in bed or in a chair. This invariably has led to the incrimination of spinal anesthesia. Electromyographic changes will be found restricted only in the muscles supplied by the ulnar nerve in the forearms and hands, while in chronic arachnoiditis incident to spinal anesthesia, changes will be found in the paraspinal muscles as well as in both upper and lower extremities. Pressure can also be exerted on the radial nerve at the radial groove. Pressure neuropathy involving the peroneal nerve may result from habitual crossing of the legs. This condition is frequently considered to be the result of the general surgical procedure or intramuscular injection in the gluteal region, even though it does not occur until weeks after discharge from the hospital.

Another common pressure neuropathy occurring during a prolonged convalescence is pressure on the tibial nerve at the popliteal fossa[12] resulting from dangling the legs over the edge of the bed or a chair. These too have been alleged to be complications resulting directly from the surgical procedure. A rather unusual case has been observed in which the patient suffered a nerve injury at home and yet blamed the spinal anesthesia in the hospital for the injury.

Case 10: Two weeks after delivery of her child under caudal anesthesia this 24-year-old female noted sharp pain in the right calf and foot and subsequently developed weakness of the right leg. The husband alleged the condition was the result of the anesthesia even though the patient had walked out of the hospital. An electromyogram revealed partial involvement of the right tibial nerve, a condition which could not have been the result of a complication of caudal anesthesia.

Comment: With the aid of the electromyogram in this case, one was able to arrive at the correct diganosis and ultimately favorable prognosis. Nevertheless, this "nuisance case" was satisfied by cancellation of the hospital charges.

Paralysis of One Extremity Owing to Actual or Alleged Injection Trauma

Trauma to the sciatic nerve claimed to be the result of hip injection is rather common but its actual occurrence is rare. In the majority of cases, the hip injection bears no relation to the muscular weakness or paralysis. The writer has observed only three patients in whom the sciatic nerve was damaged by an intramuscular injection in the gluteal region. Electromyographically in cases of a true lesion, one finds denervation restricted only in the muscles supplied by the sciatic nerve, that is, in the hamstrings, peroneal group, tibialis anterior, gastrocnemius and the intrinsic muscles of the foot. No denervation will be recorded in the abductors, quadriceps nor gluteal group. Most of these cases prove to be other pressure neuropathies such as tibial or peroneal nerve involvement, or due to an infectious lumbosacral plexitis. Here again the electromyogram is able to differentiate the true lesion of the sciatic nerve resulting from trauma to the sciatic nerve from intramuscular injection in the gluteal region from other pressure neuropathies which may simulate this state.

Case 11: Following cholecystectomy, a 64-year-old male developed a fever and penicillin was given in the right gluteal region. The patient subsequently noted weakness of the right lower extremity and claimed it was the result of the intramuscular injection. An electromyogram was done three weeks after the incident and denervation activity was found in the muscles of both feet, legs, and in the quadriceps consistent with lumbosacral plexitis more so on the right. No changes were found in the paraspinal muscles nor gluteal group. The electromyogram was consistent with bilateral lumbosacral plexitis most likely on a toxic basis.

Comment: Muscular weakness in this patient was actually due to some type of infection or toxic reaction and was not the result of an isolated lesion of the right sciatic nerve as alleged by the patient. The electromyogram was able to state with certainty that the hip injection was not at fault and the patient showed gradual improvement. Because the correct diagnosis and prognosis was given to the patient, no medicolegal action was instigated.

Hysterical Paralysis

True hysterical paralysis[13] as a complication of surgery is not common. In fact, in this large series of cases, only three patients had true hysterical paralysis. On the other hand, it has been noted that the diagnosis first entertained by the surgeon in most instances is hysterical paralysis. From these observations, the medical attendants must guard themselves in accusing the patient of having a hysterical paralysis, for the possibility of a true functional paralysis is remote. Nevertheless, because the patient is informed that there is the possibility of hysteria, he rebels against such an accusation, and unfavorable relations between the patient and the doctor are established. The writer has found that this very phenomenon of suggested hysterical paralysis has opened more doors to legal action than true neuropathies. The usual way in which this situation is handled is that the surgeon tells the patient that his paralysis is "all in his head." Naturally this accusation on the part of the surgeon is a defense mechanism. Invariably, the patient does not accept such an explanation for his paralysis, and this gives rise to emotional situations in which the relatives and the legal profession ultimately come into play. This attitude on the part of the patient is only natural, for in many instances the patient is able to walk into the hospital, and following the operation, finds himself with unexpected paralysis. Moreover, this very diagnosis usually leads to a delayed correct diagnosis and proper treatment. The result, therefore, may be disastrous.

Case 12: On regaining consciousness following perineal repair and hemorrhoidectomy under caudal anesthesia, this 47-year-old female found herself with unexpected paralysis of the right lower extremity. The surgeon told the patient that there was no reason why she should be paralyzed, and there was the possibility that this paralysis was on an emotional basis. The patient became resentful and on the fourth postoperative day left the hospital against the advice of the doctor and sought other medical aid. The second consultant expressed the opinion that such paralysis was a complication of the spinal anesthetic agent. A third stated it was the result of an embolus or stroke. Meanwhile, the patient received no treatment. She consulted an attorney who referred her to a competent neurologist. The neurologist referred her for a full electromyographic evaluation, three months after surgery. This EMG revealed that the nerve roots from L1 through S5 were normal. However, about 50% denervation was recorded in the muscles supplied by the right sciatic nerve. The level of the lesion was the gluteal fold and there was already evidence of regeneration down to the proximal third of the hamstrings.

Comment: The erroneous diagnosis of hysterical paralysis in this case resulted in strained relations between the patient and the surgeon. It also resulted in delayed proper diagnosis and physical therapy for the existing pressure neuro-

pathy of the right sciatic nerve. This condition was considered to be associated with the surgical procedure, most likely the result of the prolonged period of time in which the patient was kept in the Trendelenberg position. Although a diagnosis of hysteria was made the patient actually had a partial lesion of the right sciatic nerve. Immediate proper management of this case would have resulted in a more favorable outcome and a less emotional episode on the part of the patient and thereby avoidance of a medicolegal action.

A sympathetic attitude on the part of the surgeon and an immediate neurological consultation and electromyographic survey have been found to be helpful. The electromyogram plays a specific part in the evaluation of hysterical paralysis. The proper way to handle this situation, for example, is that when the patient first complains of muscular weakness or paralysis of the right lower extremity following abdominal surgery, the surgeon should explain that he does not see how such paralysis has any relation to the surgery for it is far removed from the operative site. Usually such muscular weakness or paralysis disappears and the patient recovers entirely. However, a competent neurologist will be called in for consultation to arrive at the precise cause of the complaint. This approach invariably will result in patient cooperation and then in the proper diagnosis and treatment. By solving the problem, better relations exist between the patient and her surgeon.

Case 13: Following abdominal surgery under spinal anesthesia, a 48-year-old female developed paralysis of the right lower extremity. On the second postoperative day a neurological consultant ordered an immediate electromyographic evaluation. An electromyogram showed normal activity in the muscles of the back and both lower extremities. Under suggestion the patient was able to send nerve impulses in all the muscles of the right lower extremity. This denoted that there was no actual nerve lesion. The most likely cause was functional. If there had been moderate or slight impairment of the nerves it could not have been determined with accuracy until further electromyographic studies had been done. On the fifteenth postoperative day, the electromyogram showed normal activity. After telling the patient that what she heard from the loud speaker was normal nerve activity, she was greatly relieved. Her apprehension referable to a stroke, complications of spinal anesthesia or cutting of a nerve during the surgery was alleviated. On the twenty-first postoperative day, the electromyogram remained normal. At this time the patient was told definitely that there was no nerve injury, and further relieved of her apprehension of paralysis, became ambulatory with only a slight limp. A week later, she walked normally.

Comment: There was no question in this case that the patient suffered from hysterical paralysis for which apparently there was fertile soil. The proper approach in these cases keep the relationship between the patient and the medical attendants cordial.

On the other hand, if such a patient had had a complete lesion of the femoral nerve, on the second postoperative day there would be no impulses detected in the quadriceps which would denote possible evidence of a femoral nerve lesion. Denervation would gradually appear until the twenty-first day at which time it would be recorded in a large amount. This again points up the necessity of getting a competent neurological examination and electromyographic survey as soon as the symptoms become apparent.

Preoperative Investigation

The surgeon and/or the anesthetist can protect themselves and relieve the patient of a considerable amount of apprehension from apparent postoperative neurological complications. This situation can be alleviated in most instances by a thorough investigation of the patient's motor and sensory systems before surgery is performed. It is important to anticipate the muscular weakness or actual paralysis. This is to say, prevention of these difficulties is just as important as to distinguish between a true neurological complication of the surgical procedure and other concurrent but unrelated postoperative neuropathies. The negligence in overlooking or failure to detect neuropathies prior to surgery or any antecedent of paralysis detected following surgery is not excusable in a medicolegal sense. Futhermore, although a certain number of cases have been observed who had actual muscular weakness or paralysis as a result of old chronic central nervous system lesions such as vascular lesions, cerebral trauma, postoperative paralysis due to tumors, multiple sclerosis as well as progressive spinal muscular atrophy, old poliomyelitis and long standing polyneuropathy or mononeuropathy, they have claimed aggravation of their condition following the surgical procedure and monetary benefits have been awarded by sympathetic juries. In this specific group of cases, the surgeon should explain that such a paralytic condition may be aggravated by the surgical procedure. The entire explanation and the possible aggravation that might result should be written on the chart to protect the surgeon as well as the hospital. Moreover, recent court decisions in California

have definitely implied that the surgeon does not go far enough in explaining to the patient the possible complications which can result from the operation regardless of how simple an operation or how favorable a prognosis such a procedure may have. The surgeon and the anesthetist, as well as the hospital, have been held liable for not explaining fully to the patient the consequences which may result from the surgical procedure. The writer's experience reveals that many of these conditions may be suspected if not definitely established before surgery is undertaken. If a patient gives a history of muscular weakness, muscle spasms, intermittent radiculitis, poliomyelitis or a history of easily becoming fatigued, generalized muscular weakness or any other related complaints, these conditions should be thoroughly investigated and should be suspected of being antecedents of postoperative complications. Any history of upper respiratory infection or febrile states which may lead to polyneuritis should be investigated. Recent injections or administration of tetanus antitoxin should be put on the chart. The patient should be questioned about radiating pain in the face, or the cervical, dorsal or lumbosacral regions. Abnormal sensations, such as numbness or tingling in the extremities, should also be noted. Excessive use of alcohol and the use of certain drugs which can precede a neuropathy or which have caused stupor or altered consciousness should be noted. These frequently lead to preoperative "Saturday night paralysis" which is not otherwise noted until surgery has been performed. Therefore, when a patient is admitted in an unconscious state, a careful survey should be made of the motor system to note any degree of paralysis and to record such information on the chart. An investigation should be made of symptoms which may suggest episodes or loss of consciousness, multiple sclerosis, progressive spinal muscular atrophy, or focal spasms resulting from myotonia. In the presence of a history of any of the above symptoms, one should have an immediate neurological consultation as well as an electromyographic evaluation and possibly even spinal fluid examination before the patient goes to surgery.

Postoperative Action

As soon as any degree of muscular weakness or paralysis or altered sensation takes place, regardless of whether the complaint is purely subjective or accompanied by objective signs, the following steps should be taken: immediate consultation with a competent neurologist who is acquainted with and has experience in these problems, and an immediate and thorough electromyographic evaluation. This evaluation should include examination of the muscles supplied by the cranial nerves, all the paraspinal muscles from C1 through S5, the cervical and brachial plexuses and the peripheral nerves of the upper extremities, and the lumbosacral plexuses and its peripheral nerves of the lower extremities. The neurologist should refrain from expressing speculative diagnoses, and an attempt should be made to arrive at a correct diagnosis with the aid of the electromyogram. It cannot be emphasized too strongly that an electromyogram should be done just as soon as the symptoms become manifest and should be repeated on the tenth, fifteenth and twenty-first postoperative days. After the examination on the twenty-first postoperative day, the findings can be combined and a specific diagnosis made. In most instances, any diagnosis made before 21 days after onset of the complaints may lead to speculative diagnoses and create an apprehensive attitude on the part of the patient, thereby opening the door to medicolegal proceedings.

Electromyogram and Differential Diagnosis

In affections of the lower motor neuron, whether in the anterior horn cells, nerve roots, plexuses or the peripheral nerves, the electromyogram is able to detect the result of Wallerian degeneration by recording denervation activity. However, one must keep in mind that Wallerian degeneration takes place gradually and may first be detected in the paraspinal muscles on the fourteenth day, slightly on the eighteenth in the extremities, and fully on the twenty-first day after onset. For this reason one must wait until the twenty-first day for full electromyographic evaluation as to whether the lesion occurred before, during or after the surgery. In the true sense, denervation activity denotes that Wallerian degeneration has taken place and the degree, whether slight, moderate, severe or complete may be stated with accuracy. Furthermore, the electromyogram is able to differentiate between neuropathies and myopathies. With the aid of the electromyogram one can state with medical certainty whether the lesion is old or recent and whether the muscular wasting is on the basis of lower motor neuron disease, a destructive process in the muscle itself (myopathy), or is the result of disuse.[14] The distribution of the denervated activity leads to the localization of the lesion. By the distribution of the activity it can state whether the disease is widespread or focal. It can further ascertain whether the disease was pre-existent, was related to the surgical procedure or entirely unrelated to the surgery. Care should be taken in making the diagnosis of con-

version hysteria. This diagnosis may be entertained; however, it should not be discussed with the patient or his relatives and above all, it should not be written on the patient's chart until the presence of an organic lesion has been definitely ruled out three weeks after the surgery.

Summary

Paralysis or muscular weakness following surgery often presents a perplexing problem. It is not unusual for the patient to blame the surgical procedure for this unexpected complication. The large majority of such cases obviously present a specific medicolegal implication. With the aid of the electromyogram the writer has found 10 specific etiological factors which are responsible for the apparent neurological complications following surgery. Only two of these 10 causes are either directly related to, or associated with, the surgery. The remaining eight etiological factors can be classified into three groups: (1) diseases of the central or peripheral nervous system which pre-existed the surgery only to become manifest after the operation is done, (2) concurrent but entirely unrelated neuropathies during the period of surgery, the clinical manifestations of which follow the surgical procedure, and (3) neuropathies which appear during the convalescent period. Hysterical paralysis occurs only rarely but the diagnosis is frequently entertained by the surgeon. Nevertheless, this diagnosis has resulted in strained relations between the patient and the surgeon and most often in medicolegal action. A certain number of these complications could have been detected by a careful clinical survey before surgery is done. There are many neuropathies which simulate the neurological complications of surgery. These simulators can be unmasked by immediate action upon appearance of the muscular weakness and paralysis. This consists of a competent neurological examination and a complete electromyographic survey. This survey should be done from the first to the fifth days postoperative, on the tenth and fifteenth and twenty-first postoperative days. In most instances, a specific diagnosis should be postponed until the neurological examination and electromyographic findings have been fully evaluated. The diagnosis of hysterical paralysis should not be made until an organic lesion has been ruled out 21 days after the actual date of surgery. The electromyographic changes of the neuropathies which are associated with the surgical procedure present two specific characteristics: the changes are restricted to the site of the surgery or to a specific nerve or location, and the electromyographic changes do not appear until 18 to 21 days after the actual date of surgery. On the other hand, the counterfeits of surgical complications present two specific different electromyographic changes: the location of the lesion is either widespread or not related to the operative site, and changes are detected immediately or within the first two weeks postoperatively. This denotes a pre-existing lesion. In short, the differential diagnosis depends on two specific conditions: the time of the appearance of the electromyographic changes, and the distribution of these changes.

References

1. MARINACCI, A. A.: *Clinical Electromyography*: A brief review of the electrophysiology of the motor unit and its application to the diagnosis of lower motor neuron diseases, peripheral neuropathy and the myopathies (Los Angeles: San Lucas Press, 1955).

2. MARINACCI, A. A.: Electromyogram in Muscular Disorders of Infancy and Childhood. *Bull. Los Angeles Neurol. Soc.*, 21:75 (June) 1956.

3. MARINACCI, A. A.: Embryological Development of the Neuromuscular Mechanism. A Preliminary Report of its Electromyographic Evaluation and its Clinical Significance. *Bull. Los Angeles Neurol. Soc.*, 24:36 (March) 1959.

4. MARINACCI, A. A.: The Use of Electromyography in the Differential Diagnosis of Lumbar Herniated Disks. *Bull. Los Angeles Neurol. Soc.*, 23:65 (June) 1958.

5. MARINACCI, A. A.: Myotonia of the Lower Axial Musculature Simulating Lumbar Herniated Disks. *Bull. Los Angeles Neurol. Soc.*, 24:95 (September) 1959.

6. MARINACCI, A. A. and RAND, C. W.: The Electromyogram in the Diagnosis of Acute Infectious Polyneuritis. With Particular Reference to the Differential Diagnosis Between this Disease and Industrial Injuries. *Indust. Med & Surg.* 25:507 (November) 1956.

7. MARINACCI, A. A.: Infectious Neuronitis and its Electromyographic Characteristics. *Bull. Los Angeles Neurol. Soc.*, 23: 102-111 (September) 1958.

8. MARINACCI, A. A.: Horse Serum Neuropathy. *Bull. Los Angeles Neurol. Soc.*, 23:149 (December) 1958.

9. MARINACCI, A. A.: Electromyogram in Femoral Nerve Lesions. *Bull. Los Angeles Neurol. Soc.*, 21:137 (September) 1956.

10. MARINACCI, A. A. and COURVILLE, C. B.: Electromyogram in the Evaluation of Neurological Complications of Spinal Anesthesia. *J.A.M.A.*, 168:1337 (Nov. 8) 1958.

11. MARINACCI, A. A.: Peripheral Nerve Complications in General Surgical Procedures. *Bull. Los Angeles Neurol. Soc.*, 22: 20 (March) 1957.

12. MARINACCI, A. A.: Paralysis of the Legs in Sedentary Workers. A Preliminary Report. *Bull. Los Angeles Neurol. Soc.*, 22:73 (June) 1957.

13. MARINACCI, A. A.: The Electromyogram in the Triad of Muscular Atrophies. *Bull. Los Angeles Neurol. Soc.*, 19:166 (September) 1954.

14. MARINACCI, A. A. and RAND, C. W.: Nerve Lesions in Industry. Atrophy of Disuse as a Confusing Element in the Diagnosis; the Value of Electromyography. *Calif. Med.*, 88:33 (January) 1958.

EXTENDED FIRST-AID

for the Badly Injured in Industry

• FRIEDRICH WECHSELBERGER, M.D.
United Austrian Iron and Steel Works
Linz-Donau, Austria

The number of accidents in industry have lessened by prevention; serious accidents, however, have increased in proportion to the number of serious traffic accidents. This raises the question of whether we can leave first-aid treatment to the layman. Whether a catastrophe occurs on the road or at work, the decision of which of the heavily injured should be brought to the hospital first, is strictly one for a physician.

Today we believe that the first half hour after an accident may be the most important and decisive in the life of the badly injured who suffers from shock. To gain time, it is imperative to start treatment of shock immediately. Shock, if untreated, will result in death. Therefore, at each discussion of this problem, it should be urgently stressed that we give extended first-aid with the most suitable means at the place of accident and during transportation to the hospital.

I believe that extended medical first-aid for the badly injured at the place of accident is fully justified since it aims at averting all kinds of life-endangering complications of circulation and respiration until the patient reaches the operating table, to deliver him to the hospital in such condition that lifesaving surgical intervention can be done under the most favorable circumstances.

Based on this knowledge that the first half hour is the most important hour for the whole life of the badly injured in shock-condition, we have been trying for the past five years to combat conditions of shock and breathing complications right at the place of accident and during transportation to the hospital.

To save precious time, we have here at the "Vereinigte Ostereichische Eisen-und Stahlwerke" (VOEST) (United Austrian Iron and Steel Works) in Linz the emergency number of

the phone connected with a multispeaking system which makes it possible to direct the industrial first-aid, the ambulance, the industrial accident surgeon and the safety engineer at once and on the shortest possible way to the place of the accident. Five years ago we had built into the ambulance cars simple devices which help to combat successfully difficulties of respiration and circulation and the foremost conditions of shock caused by severe injuries, such as opening of the upper breathing tracks by clearing and cleansing them, artificial respiration with oxygen and instruments for transfusions to supply the blood circulation with a blood-isotonic solution or with blood serum.

Relying on experiences of the past several years, we have constructed an ambulance with a special brake device which makes it more maneuverable, which is very important if accidents occur at narrow places and the car is restricted to small spaces. The top of the car was raised and built higher than the usual cartops and therefore the inside of the car offers enough space for a man to stand erect. The necessary equipment for extended first-aid is placed into a built-in chest. The stretcher serves at the same time as a small operating table and is situated at the center of the car, which enables us to have free access to the injured from all sides. This stretcher table combination can easily be shifted and tipped up and down.

There is enough moving space in the car to apply dressings to hemorrhaging injuries and the setting of a broken limb can be done in the car and not before the eyes of idle onlookers. The car has strong lights and an added heating system. At the front of the car we have a small anesthetic apparatus which can simultaneously be used as a suction apparatus. This is important especially for skull injuries and unconscious patients, because it enables us to clear their air passages and avoid death by suffocation. For the transportation of the unconscious patients we definitely advise the sideward position. After intubation or insertion of the Mayo-airway we are in position to supply the patient with oxygen or lessen his pains and suffering by administration of nitrous oxide. Aside from the possibility of supplying the patient right in the ambulance car with oxygen, we carry with us a portable pulmotor. In case of shock patients it is more important to replenish the circulating blood with blood serum or blood substitute than to constrict the veins with medicaments which would only diminish or hinder the freely circulating amount of blood.

The built-in chest contains blood serums and transfusion equipment, tracheotomy instruments, equipment for intubation and anesthetic, injections with pain killing medicaments, bandages for hemorrhages, needles for puncturing a tension-pneumothorax and bandages to dress and close pleural injury. We want to emphasize that this new ambulance car is not an operating car, it only makes extended first-aid possible through a physician at the place of accident and during transportation to hospital. Primarily we want to bring the heavily injured to such condition that he can be transported to the accident hospital.

We were able to determine the blood groups with the Rhesus factor of most of the 16,000 employees of the company and vaccinated them at the same time against tetanus and provided them with cards. A list of the blood groups is always at hand in our own accident station, a duplicate is permanently deposited in the accident hospital, which is situated approximately six kilometers from the factory. Therefore it is easily possible to order by phone right from the place of accident the right group of blood from the blood bank of the hospital. Following our own infusion in the ambulance car we are able, after a careful cross examination, to transfuse the blood to the patient with the same equipment which remained in the car.

We have been practicing this first aid treatment at the place of accident for the past five years and believe firmly that it helped to save the lives of many seriously injured persons.

We Doubt That

The nonconformist is the man who gets ahead today, reports the Opinion Research Corp., Princeton, N.J. A survey of 600 middle-management men indicates the "organization man" is not a coddled corporate chief. Contrary to Parkinson's law that "the plodding are rewarded, the competent penalized," one company says, "We push the theory: use your backbone instead of your wishbone." Middle-management men recognize that their corporate role is not to be a rubber stamp, says ORC, but to get things done despite risks.

Bureaucracy is cited by middle-management as the biggest impediment to getting the job done. Too many committees, delay in decisions, reluctance to delegate authority, and corporate red tape are all blamed for slowing the wheels of corporate progress.

Of the middle-management people interviewed, 83% say their companies make changes easily, and 78% say they enjoy "adequate freedom in their job."

—From *Industrial Relations News*, Feb. 27, 1960.

CLINICAL OBSERVATIONS WITH CHYMOTRYPSIN

- L. H. TEITEL, M.D.
- S. J. SIEGEL, M.D.
- J. TENDLER, M.D.
- P. REISER, M.D.
- S. B. HARRIS, M.D.

Enzyme therapy is now far better established than any explanation of why and how its various effects succeed. These therapeutic and prophylactic effects include anti-inflammatory, antiedema, thrombolytic, mucolytic, fibrinolytic, and "healing." Because of this range of benefits, new uses for proteolytic enzymes are continually being explored.

Chymotrypsin* is an endopeptidase, fractionated from bovine pancreas, by modification of the Kunitz and Northrop method.[1]

Chymotrypsin and trypsin are closely related chemically, but certain qualitative differences obtain. Hendley and others[2] assert that chymotrypsin is preferable as an anti-inflammatory agent, since it does not clot and is less toxic under rapid administration. Miechowski and Ercoli[3] maintain that chymotrypsin has a greater anti-inflammatory action than trypsin. Both trypsin and chymotrypsin convert profibrinolysin to fibrolysin.[4]

Chymotrypsin is useful as a mucolytic agent in the relief of respiratory disorders.[5] It liquefies thick exudations and secretions during eye, ear, nose, throat, and pulmonary and bronchial involvements. Patients with acute or chronic respiratory tract infections enjoy greater vital capacity as thick and stubborn secretions thin, as coughs become loose and productive. Used conjointly with antibiotics, there is good response, after parenteral chymotrypsin, in numerous complaints, such as chronic otitis, chronic mastoid, chronic maxillary sinus, chronic frontal sinus, chronic ethmoid sinusitis, Eustachian tube synechia, otitis adhesions, diphtheria membrane, croups, and laryngitis edema.

Reports from surgical practitioners further extend the promise of protease therapy. Dental, ophthalmological,[6] and surgical techniques are among others reported to have profited prophylactically as well as therapeutically. To the plastic surgeon, protease therapy offers almost unlimited possibilities. Cosmetic or reconstructive surgery rarely can avoid intentional and severe tissue-insult.

Whether interest in proteases must remain practical, no one can fail to suspect that they perform on a fundamental biochemical level. When enzymatic action alters body repair and body defense mechanisms beneficially, it does so in a manner somewhat independent of specific complaint or site of distress. It is likely that proteases neither inhibit nor suppress the processes of localized inflammation inseparable from body defense or reparative functions. Safer to say that they modify these functions. In certain cases, however, such modification is tantamount

*The chymotrypsin used in this study was supplied by the Armour Pharmaceutical Company in the form of the injectable Chymar Aqueous, Chymar Buccal and the oral form, Chymoral.

TABLE I.
CHYMAR AQUEOUS PARENTERAL

Number of Cases	106
Satisfactory Results	52
Partial Improvement	40
None	14

Diagnosis	Cases	Satisfactory	Partial	None
Thrombophlebitis with edema and ulceration	11	9	2	
Contusion with edema	14	8	6	
Furunculosis	4	2	2	
Abscess	6	3	2	1
Hematoma	6	5	1	
Sinusitis	7	3	2	2
Bronchitis	14	6	6	2
Asthma	3		2	1
Acute Pelvic Inflammatory Disease	12	3	5	4
Chronic Pelvic Inflammatory Disease	20	8	9	3
Postoperative Lymphedema	9	5	3	1
	106	52	40	14

TABLE II.
CHYMAR AQUEOUS PARENTERAL WITH ANTIBIOTICS

Number of Cases	51
Satisfactory Results	38
Partial Improvement	12
None	1

Diagnosis	Cases	Satisfactory	Partial	None
Thrombophlebitis with edema and ulceration	7	7		
Furunculosis	6	6		
Abscess	4	4		
Bronchitis	8	6	2	
Asthma	5	3	2	
Contusion with laceration and edema	6	4	2	
Acute pelvic inflammatory disease	10	6	3	1
Chronic pelvic inflammatory disease	5	2	3	
	51	38	12	1

to restraint of excessive inflammatory responses which otherwise might produce dysfunction and deformity indistinguishable from the damages of actual disease or injury.

The great number of reports confirming that proteolytic enzymes reverse inflammation, resorb edema, and liquefy or localize suppurative exudations present different theories on their possible mode of biochemical action.[7] Many current explanations insist that antiphlogistic and thrombolytic actions may be concurrently obtained.[8] "The primary mechanism underlying the experimental and clinical effects of proteases involves the diffusion or adsorption of plasminogen activators to the fibrin in thrombi or acutely inflamed tissue, with activation of intrinsic thrombus or fibrin plasminogen into the plasmin."[9]

Whatever the effective mechanism, or its degree of anti-inflammatory or lytic achievement, accessibility of the affected area to protease transport, via the blood, seems of paramount importance.

Methods and Materials

Impressed with the wide applicability of enzyme therapy, the authors decided to evaluate its benefits in their private practices. Three of us used chymotrypsin to treat cases encountered in general practice. A fourth applied it to a selection of his ENT cases. Our fifth colleague, a gynecologist, studied the role of Chymar in the relief of pelvic inflammatory diseases, both chronic and acute.

Chymar was administered in the following ways to the patients treated: Chymar Aqueous Parenteral — Table I; Chymar Aqueous Parenteral with Antibiotics — Table II; Chymar Buccal Only — Table III; and Chymar Oral — Table IV. Diagnostic categories involved in the tests of therapy can be observed in the tables.

Before administering chymotrypsin to patients with known allergies or sensitivities, the usual precautions were taken. Average dosage in parenteral administration was one cc, given in-

TABLE III.
CHYMAR BUCCAL ONLY

Number of Cases	102
Satisfactory Results	52
Partial Improvement	39
None	11

Diagnosis	Cases	Satisfactory	Partial	None
Thrombophlebitis	6	4	2	
Thrombophlebitis with lymphangitis, edema, and ulceration	9	6	3	
Hematoma	7	4	3	
Contusion with hematoma	9	7	2	
Laceration with edema	12	6	6	
Furunculosis	8	6	2	
Abscess	5	4	1	
Acne	4	1	3	
Sinusitis	9	4	2	3
Asthma with bronchitis	11	3	5	3
Chronic pelvic inflammatory disease	8	2	3	3
Epididymitis	2		1	1
Paronychia	5	3	2	
Post tonsillectomy	7	2	4	1
	102	52	39	11

TABLE IV.
CHYMAR ORAL

Number of Cases	47
Satisfactory Results	25
Partial Improvement	16
None	6

Diagnosis	Cases	Satisfactory	Partial	None
Thrombophlebitis	6	5	1	
Thrombophlebitis with ulceration	4	2	2	
Furunculosis	5	3	2	
Abscess	2	1	1	
Contusion with laceration and edema	8	7	1	
Contusion with edema	3	2	1	
Bronchitis	7	2	3	2
Asthma with bronchitis, emphysema	4		2	2
Chronic pelvic inflammatory disease	8	3	3	2
	47	25	16	6

tramuscularly daily, over an approximate one to two week period. Buccal administration was one tablet, dissolved in the buccal pouch, four times daily. Chymoral tablets were administered at the level of two tablets q.i.d. initially. Progress of the patients, all adults, was carefully evaluated by the physician.

The Chymar Aqueous used is a solution of crystallized chymotrypsin in sodium chloride injection, for intramuscular administration. Penicillin, erythromycin and tetracycline were the antibiotics used (Table II).

Results

The results of the therapy among the 306 patients constituting the total series are summarized in the tables included.

Results were evaluated according to the following criteria: (1) satisfactory; patients who recovered and were free of symptoms, (2) partial; patients who, although improved, still had pain or complaints, and (3) none; patients who did not benefit from the drug.

The range of responses represented as "none" or no improvement, was from approximately 2% to 10%. Largest percentage of nonresponsive cases occurred when Chymar was buccally administered.

Untoward reactions were few and slight; there were 4 patients who developed mild gingivitis after buccal therapy. Parenteral injections were occasionally painful at site of injection.

Conclusion

From our experiences, we feel that chymotrypsin proved itself a valuable adjunct in the treatment of a variety of inflammatory states.

References

1. Northrop, H. H., Kunitz, M., and Herriott, R. H.: *Crystalline Enzymes*, 2nd ed. (New York, 1946).
2. Hendley, C. D., *et. al.*: *Arch. Intern Pharmacodynamie*, 106:164, 1956.
3. Miechowski, W. L. and Ercoli, N.: Studies in Proteolytic Enzymes — II-Trypsin and Chymotrypsin in Relation to Inflammatory Abscess. *J. Pharm. and Experimental Therapy*, 116:43, 1956.
4. Stormorken, H.: The Effect of Trypsin on Blood Coagulation and the Mechanism of its Action. *J. of Lab & Chem. Med.* (Oslo, Norway), 48:521, 1956.
5. Parsons, D. S.: Asthma, Bronchitis, Rhinitis and Sinusitis: Adjunctive Treatment with Intramuscular Chymotrypsin. *Clinical Medicine*, 5:11 (November), 1958.
6. Jenkins, B. H.: The Use of Intramuscular Chymotrypsin in Ocular Conditions. *J.M.A. of Georgia*, October, 1956, p. 431.
7. Menkin, V.: Studies on Inflammation, I — Isolation of Factor concerned with Increased Capillary Permeability in Injury. *J. Exper. Med.*, 67:129, 1938; II — Concerning Mechanism of Cell Migration. *ibid.*, 67:145; III — On Formation of Chemotactic Substances by Enzymatic Action, *ibid.*, 67:153.
8. Murphy, H.: Trypsin in Peripheral Vascular Diseases, Review and Report on Treatment of 210 Patients. *New York State Journal of Medicine*, 59:10 (May 15, 1959).
9. Innerfield, I.: Physiological and Clinical Effects of Buccally Given Proteases. *J.A.M.A.*, 170:8 (June 20, 1959).

Climate of Stress

Mental health researchers at the University of Michigan Medical Center are gaining new insight into mental illness by studying the average man's reaction to stress. They are finding that man has defenses in depth which help him maintain his mental equilibrium in the face of "overwhelming and outrageous fortune."

Dr. James G. Miller, director of the University of Michigan Mental Health Research Institute (MHRI), reporting on progress in stress studies at a scientific meeting, said three variable factors — the strength or nature of the stress, the individual's awareness of a threat, and the mechanisms of escape or adjustment available to him — govern the degree of anxiety he experiences in any situation.

A strong, recognized threat to an individual who has no defense against it will produce the greatest anxiety. By contrast, if the threat is minor, or the person is not aware of it, or if a simple adjustment will avoid it, the resulting stress and anxiety is insignificant, he reported.

Anxiety can also result from the pressure of information which an individual has to handle in his job. If the flow is increased beyond a certain point, the stress creates confusion and at least temporary breakdown. This is a common experience of many executives who must cope with great amounts of information, Dr. Miller explained. MHRI investigators have created laboratory-type situations to study this condition.

They found: When a person is overloaded with information — has "more than he can handle" — the stress then leads to confusion and the individual starts using a variety of methods to adjust himself to the situation. He begins to omit some information, to make errors, or to delay the response until there is a lull when the stored information can be processed.

Individual nerve cells in the body behave similarly. These cells also can become "overloaded" with information, and then start skipping stimuli, or may fail to respond at all for some period of time. Cells, individuals, groups of people and entire social institutions show similar reactions to stress, Dr. Miller reported. "Present-day behavioral science gives little or no thought to such generalities," he concluded, terming this neglect "a great waste of scientific effort."

Proposed Medical Standards for the Operators of Commercial Vehicles

• SEWARD E. MILLER, M.D.
Director, Institute of Industrial Health
University of Michigan
Ann Arbor, Michigan

The human element, the major factor in vehicular accidents, has been neglected. It has been neglected particularly by the physician who is the only person able to ascertain the physical, mental, emotional and physiological impairments of an individual and to evaluate these disabilities in relation to that individual's ability safely to operate a motor driven vehicle.

Physicians long have been engaged in preserving and avoiding disabilities through the prevention of traumatic accidents. Our official medical organizations have taken cognizance of the situation by establishing committees to work on various facets of this problem. About 35 years ago such a committee of the American Medical Association developed a special report on Visual Standards for Operators of Motor Vehicles. This was followed in 1937 by another special report given before the section of ophthalmology at the annual meeting of the American Medical Association. The report was entitled, "Visual Standards for Licensure to Operate Motor Vehicles." Quite properly, vision early was singled out by medicine as an important factor in the safe operation of motor vehicles.

The Bureau of Legal Medicine and Legislation of the American Medical Association in 1929 prepared a recommended standard physical examination form for the "Physical Examination of Drivers of Motor Vehicles in Interstate Commerce." This was accompanied by general instructions for performing such examinations. Physicians have not acted alone, for responsible government agencies have wielded their influence to set minimal physical standards for operators of motor driven vehicles. The Interstate Commerce Commission has done so in their motor carrier safety regulation. Therein are established, in Part 191, Physical Qualifications of Drivers. The U. S. Civil Service Commission has done the same for civilian operators of government owned motor vehicles. Some agencies of the Federal Government have made additional regulations of their own, notably the Post Office Department, the Department of Defense and the Atomic Energy Commission.

The Civil Aeronautics Administration has established "Physical Standards for Airmen; Medical Certificates." In it are established physical standards for the several categories of airmen. In addition, it has prescribed the form to be used in recording and reporting these physical examinations.

Presented as The Annual Doctor William T. Cummins Memorial Lecture, 56th Annual Meeting of the Western Association of Railway Surgeons, September 9-12, 1959, Denver, Colorado.

Well known to all are the minimal physical requirements stipulated by each state for securing an operator's license for driving a personal car. This mostly involves vision, as does the Coast Guard and Maritime requirements for ship's officers and pilot's licenses. I particularly emphasize that these requirements are for licenses.

The physician examining an applicant for a trucking or bus transport company has certain definite criteria or minimal physical requirements, established by the Interstate Commerce Commission, that he uses. The individual company may have, and frequently does have, additional physical requirements.

Physicians examining or re-examining aviators, pilots, etc., have certain physical requirements dictated by the Civil Aeronautics Administration to use as a guide in their examination. But for the railway surgeon examining railway operating personnel, I find no such guidance. The Interstate Commerce Commission has no jurisdiction over physical capacities of railroad operating personnel. The railroad retirement board also has established no minimal standards of physical capacity for railway operating personnel. It does have the provisional occupational disability rating schedule that governs only disability retirement.

In this important matter, the railway surgeon has been left alone by government agencies. This is not all on the debit side, for with greater freedom goes greater opportunity and concurrently greater responsibility. Although government agencies have not been specifically helpful, recent work of the medical associations and of other government agencies can be of great assistance. It has been my privilege to serve on such committees of the A.M.A., I.M.A. and W.H.O. I shall draw heavily on this work.

Dr. William Taylor Cummins was not dismayed by unchartered fields. His was the firm, inquiring mind that examined the situation and initiated required efforts leading toward its solution. Just this frame of mind is needed to examine objectively the relationship of physical capacities and disabilities of operating personnel to accidents, with the objective of accident prevention. Basically, the relationship between physical impairments and accidents is much the same in the various motor vehicle transportation industries — be it pilots and plane accidents, automotive vehicles and highway accidents, or train and railway accidents. The physical, mental and emotional impairments that enhance the chance of accidents are common to all.

By improved design and construction of all these vehicles, mechanical failures are becoming less responsible for accidents. However, no comparable improvement has been made in the human mechanism that must operate these fast moving motor vehicles.

It is the human factor that overshadows all other factors in the production of accidents. There is no doubt that poor judgment, impaired reaction time, faulty attitudes, emotional disturbances, illness, physical disabilities including impairment of the sensory organs, are basically responsible for most motor vehicle accidents. Thus, the key to ultimate success in all motor vehicle accident prevention lies in the operator — his intelligence, his sense of personal and social responsibility, his reactions in normal conditions and under stress to various stimuli, his operating ability in good health and in illness.

In order for the physician to determine whether an individual is qualified physically to operate a motor vehicle, the physician must perform a complete history and physical examination. Upon completion of such an examination, the physician should be able to determine the individual's ability to operate a motor driven vehicle with safety.

How do you, in honesty and fairness, make this assessment? It can only be made by utilizing astute judgment with a background of facts and knowledge regarding specific disabilities or impairments that are likely to produce motor vehicle accidents.

Let us then consider some of the known facts regarding various types of physical, mental and emotional impairments that are accompanied by increased chance of accidents.

Before reviewing this material, lest I be accused of bias against employment of the physically handicapped or older worker, I wish to make it eminently clear to all, that properly placed, in jobs within their physical capacities, the disabled have proved excellent workers with higher than average production, less absenteeism, and fewer accidents than the average employee. However, there are two important factors for us to consider in this connection. First, proper placement in jobs within their physical capacities and second, when examining individuals who operate a motor driven commercial or public conveyance vehicle, the safety of the public must be considered. Not only is the "good" or safety of the public of greater import than selfish or vested interests of an individual, but unequivocally the "good" or best interests of the impaired individual also are served when we do not certify a physically, mentally, or emotionally impaired individual for operation of a commercial or public conveyance vehicle.

Much pertinent information regarding these impairments or disabilities and their relationship to accidents has been developed by medical

associations and governmental agencies. We will group this material in the broad categories of metabolic diseases, drugs, alcohol, fatigue, cardiovascular disease, vision, hearing, physical deformities and emotional, neurological and psychiatric disorders. Let us briefly review each of these categories of impairments with the proposal of standards for operators of commercial or passenger transport motor driven vehicles.

Metabolic Diseases

Disturbances in function of the endocrine glands cause many varied symptoms from generalized asthenia, muscle weakness and spasm or tetany to sudden episodes of vertigo or unconsciousness. Individuals so afflicted should not operate a motor vehicle until these symptoms have been controlled by appropriate medical therapy. The more important conditions likely to impair motor vehicle operating ability are:

Thyroid disease. In addition to tachycardia, exophthalmos and tremor, individuals with hyperthyroidism are prone to emotional disturbances, anxiety and even psychotic symptoms. Therefore, individuals with thyrotoxicosis should not operate any type of motor vehicle until the disabling symptoms are controlled. Individuals with marked hypothroidism, myxedema or cretinism with obvious slowing of reaction time should not operate a motor vehicle.

Diabetes mellitus. Patients suffering from diabetes mellitus of a degree that can be controlled adequately by diet alone may operate any type motor vehicle. Also, older individuals with mild diabetes controlled by diet and sulfonylurea type drug, who experience no reactions, may operate any type motor vehicle. If insulin is required even though the diabetes is well controlled, the individual should not operate a commercial or passenger transport vehicle because of the possibility of a sudden attack of hypoglycemia. The uncontrolled diabetic should not operate any type motor vehicle because of the development of diabetic complications and the possibility of sudden diabetic coma. On the other hand, an individual with true renal glycosuria safely may operate any type motor vehicle.

Hyperinsulin states. Individuals suffering from recurring spontaneous attacks of hypoglycemia, from pancreatic islet cell adenoma or other organic or functional causes should not operate any type motor vehicle while subject to attacks of faintness, giddiness or unconsciousness.

Hyperparathyroidism and hypoparathyroidism. Individuals suffering from hyperparathyroidism with muscular weakness and hypotonia should not operate commercial or passenger transport motor vehicles. Individuals suffering from acute hypoparathyroidism with increased neuromuscular excitability, cramps, spasm and generalized tetany should not operate a motor vehicle. Chronic hypoparathyroidism varies greatly in its manifestations and severity. However, even mild cases without tetany should not operate commercial or passenger transport vehicles.

Posterior pituitary insufficiency. Individuals suffering from diabetes insipidus should not operate a commercial or passenger transport motor vehicle.

Anterior pituitary insufficiency. The severe carbohydrate deficiency and spontaneous hypoglycemic episodes that characterize Simmond's disease make it mandatory that these individuals should not operate any motor vehicle.

Acromegaly or gigantism (anterior pituitary hyperfunction). With the development of muscular weakness and pain, ease of fatigue, cardiac enlargement and intractable headaches, these individuals should not operate any motor vehicle. Moreover, about 50% of these patients develop visual disturbances which also make it unsafe for them to operate a motor vehicle.

Cushing's syndrome (pituitary basophilic adenoma, tumor or hyperplasia of the adrenal cortex). These patients with the development of muscular weakness and osteoporosis should not operate a motor vehicle. Good recovery following appropriate therapy enables these individuals again to operate a private car but not a commercial or passenger vehicle.

Addison's disease (hypofunction of adrenal cortex). Well developed cases, particularly those with asthenia and/or persistent low blood pressure should not operate a motor vehicle.

Hyperfunction of adrenal medulla. This condition occurs with the development of a pheochromocytoma tumor which clinically is characterized by attacks of headache, dizziness, weakness and blurring of vision with a rapid pulse and elevated blood pressure. Until completely free of these attacks by removal of the tumor, such individuals should not operate a motor vehicle.

Drugs

Numerous drugs, both self-administered or taken at the direction of a physician, produce in some individuals reactions impairing that individual's ability to operate a motor vehicle. The degree of impairment varies tremendously depending upon the severity and type of reaction. In addition, some patients experience unusual reactions to drugs that ordinarily do not produce disabling symptoms. Should unusual reactions, allergic or otherwise, occur which impair sensory, mental or physical functions mak-

ing it unsafe to operate a motor vehicle, the industrial physician must not permit the impaired individual to operate a motor vehicle until the disabling symptoms have been eliminated. The more important groups of drugs likely to impair motor vehicle operating ability are:

Central nervous system depressants—Analgesics (narcotics). The drowsiness induced by analgesic drugs sufficiently impairs operating ability so that individuals with such drowsiness should not operate a motor vehicle. In addition, morphine, its derivatives and the synthetic narcotics such as demerol, cause varying amounts of euphoria, inability to concentrate, apathy, dimness of vision, and rapid flow of uncontrolled thought. Individuals under the influence of these drugs should not operate a motor vehicle.

Hypnotics and sedatives. These drugs not only depress central nervous system activity producing drowsiness and sleep, but also they may produce motor and sensory changes. Individuals taking hypnotic doses of these drugs should not operate a motor vehicle. Patients receiving mild sedation who experience no drowsiness may operate motor vehicles. Of course, a barbiturate addict is incapable of operating a motor vehicle. Individuals having received barbiturates and a local anesthetic for minor surgery should not operate a motor vehicle that day.

Tranquilizing drugs (meprobamite, chlorpromazine, reserpine, etc.). During the initial period of administration, some drowsiness frequently is experienced. Also under large doses the accompanying hypotension may occasionally produce short episodes of faintness or giddiness. Therefore, during the initial phase of dosage adjustment, these individuals should not operate a motor vehicle. At all times these individuals should carefully be observed for symptoms of drowsiness or faintness. Employees stabilized on a maintenance dosage of these drugs who are without symptoms of drowsiness or episodes of faintness, may drive a private motor vehicle but should not operate a commercial or passenger transport motor vehicle.

Central nervous system stimulants (amphetamine type). Although these drugs temporarily increase alertness and efficiency, large doses in some individuals may produce headache, dizziness, agitation, irritability and a decreased ability to concentrate. In all individuals, a period of fatigue and depression follows the initial stimulation. Operators of commercial or passenger vehicles should not take these drugs while on duty or come on duty following the taking of such drugs.

Antihistamines and drugs preventing motion sickness. There is great individual difference in reaction to these drugs with dizziness and/or drowsiness occurring fairly frequently. Moreover, it is unpredictable in which individuals dizziness and/or drowsiness will occur. Individuals under these medications should not operate a motor vehicle until it has been established by prior trial that they do not experience dizziness or drowsiness.

Anti-infective agent (streptomycin). In full and prolonged dosage, undesirable reactions of nausea, loss of sense of balance and dizziness, ringing in the ears and deafness may occur. Individuals developing such symptoms should not operate a motor vehicle.

Sulfonamides. Individuals receiving these drugs should be warned that if they develop any drowsiness or dizziness they at once should cease operating a motor vehicle.

Hallucinogens (marijuana, etc.). These drugs have singular abilities for changing normal emotional reactions, even causing individuals to become oblivious or indifferent to their surroundings. Individuals under the influence of these drugs should not operate a motor vehicle.

Alcohol

Many who have studied the subject agree that the drinking driver is involved in more than half of the fatal highway accidents. Alcohol is the largest single factor in a large proportion of those accidents attributed to speed, reckless driving, wrong side of the road, etc.

Ethyl alcohol (grain alcohol, C_2H_5OH) is a central nervous system depressant, even though for years it was called a stimulant. Its effect upon human beings is in all phases and stages a depressant. Many investigators have shown that an impairment of judgment, decreased tolerance to glare, decreased sense of caution, etc., takes place with a blood alcohol of 0.03 to 0.05%. Certainly impairment of motor vehicle operating ability occurs with a blood alcohol over 0.05%. Two bottles of beer, or two ounces of 100 proof whiskey in one hour will result in over 0.05% alcohol in the blood of the average individual. One drink may be tolerated but two drinks impair operating ability for about two hours. Three drinks are too many. No alcohol, of course, should be permitted in those operating commercial or passenger transport motor vehicles, nor should employees come on duty after consuming alcoholic beverages.

Fatigue

Fatigued, drowsy and sleepy operators are responsible for many accidents. They are unable to make split second decisions, reaction time is slowed along with a loss of peripheral vision and loss of attention. All individuals should be cautioned against operating a motor vehicle after

inadequate rest. Moreover, persons who periodically, or easily, develop fatigue should not operate commercial or passenger transport vehicles. In this connection the vehicle or cab should not be kept too warm as this increases drowsiness and the sense of fatigue.

Fever and Infectious Diseases

Patients in the fever stage of an infectious disease should not operate a motor vehicle because of decreased attention, impaired judgment and reaction time.

Carbon Monoxide from Exhausts and from Smoking

The effect of carbon monoxide is to decrease the visual sensitivity of the eye in low illumination; also it causes muscle weakness and headache. Motor vehicle operators should be advised to refrain from frequent smoking, particularly at night. Good ventilation is requisite in the cabs of all commercial and passenger motor vehicles.

Cardiovascular Disease

Rheumatic heart disease. Appraisal must be made of the extent of damage in connection with valvular deformity, derangements of rhythm, progressive cardiac enlargement, and myocardial insufficiency. Aortic stenosis, when marked, is prone to lead to angina pectoris, syncope, or sudden death. Patients with significant aortic stenosis should not operate a motor vehicle. Even patients with lesser degrees of aortic stenosis without symptoms of angina or syncope should not operate commercial or passenger transport vehicles but, of course, may operate private motor vehicles. Patients with aortic insufficiency and left ventricular failure with dyspnea and/or paroxysmal nocturnal dyspnea should not operate a motor vehicle. Patients with lesser degrees of aortic insufficiency without dyspnea should not operate commercial or passenger transport vehicles but may operate a private motor vehicle. Patients with myocardial insufficiency due to mitral stenosis or insufficiency should not operate either commercial or passenger transportation vehicles, but may continue to operate a private car when the myocardial failure is well controlled by therapy with only minimal dyspnea on exertion. Valvular deformity due to rheumatic fever involving the tricuspid and pulmonic valves is less common. Patients with evidence of right-sided heart failure should not operate either commercial or passenger transportation vehicles. If the heart failure is controlled by therapy, they may operate a private motor vehicle. Disturbances of rhythm are frequent complications of rheumatic heart disease. Uncontrolled auricular tachycardia, flutter fibrillation, with a rapid ventricular rate, is apt to be associated with diminished cardiac output severely incapacitating the patient and therefore they should not operate any motor vehicle. However, when well controlled by therapy, such patients may operate a private motor vehicle. Because of the danger of embolization, patients having auricular fibrillation should not operate commercial or passenger transportation vehicles.

Hypertension. The upper limit of normal blood pressure is considered to be 150-160/90 mm. Hg. If fixed hypertension is present, its etiology should be ascertained. Hypertension in itself is not disabling for the safe operation of a motor vehicle but the complications arising from hypertension, such as damage to brain, eyes, heart, or kidneys, well may prove to be disabling. Patients with a persistent hypertension of 180/100 should be examined carefully for disabling complications. Cerebral vascular disease or previous cerebrovascular accident, changes in the optic fundi resulting in diminuation of vision, left ventricular hypertrophy with heart failure, and renal insufficiency, sufficiently may be disabling so that such patients should not operate a motor vehicle.

Hypotension. Hypotension in itself, unless accompanied by disabling weakness, faintness, or ease of fatigue, is not a contraindication to the operation of any motor vehicle.

Arteriosclerotic heart disease. Sclerosis of the coronary vessels results in diminution of blood flow which may become insufficient to nourish the myocardium, particularly in times of increased exertion, and angina pectoris results. More prolonged episodes of inadequate myocardial nourishment and substernal pain are termed coronary insufficiency. Since arteriosclerotic heart disease is frequently associated with sudden death, once this diagnosis has been established these patients should not operate a motor vehicle unless the associated attacks of angina are mild, infrequent, and controlled with therapy. Such patients then may continue to drive their private motor vehicles.

Diminished cardiac reserve. Minor degrees of impairment of function of the myocardium will result in dyspnea on exertion. If this is minimal it should not be a contraindication to the operation of a motor vehicle. If myocardial insufficiency is more marked so that dyspnea prevents the performance of the usual duties involved in the operation of a commercial or passenger motor vehicle or is likely to prevent proper performance under emergency conditions, then such individuals should not operate these motor vehicles.

Arrhythmias and conduction disturbances. Auricular premature beats are of little consequence and do not preclude the operation of mo-

tor vehicles. Patients with paroxysmal auricular tachycardia, flutter or fibrillation with myocardial insufficiency, should not operate a commercial or passenger transportation vehicle. If such attacks are well controlled by therapy, then the patient may operate a private motor vehicle. Auricular fibrillation of a chronic nature enhances the risk of embolization from the auricles and such individuals therefore should not operate a commercial or passenger transportation vehicle.

Ventricular arrhythmias other than occasional ventricular extrasystoles are usually associated with serious heart disease and frequently are the cause of sudden death. Such individuals should not operate commercial or passenger transportation vehicles but may drive a private vehicle. Auriculoventricular block, if of a minor degree, is of no significance. Patients with prolonged degrees of A.V. block or complete A.V. block, if associated with Adams-Stokes syncopal attacks, should not operate a motor vehicle. When these attacks are controlled by therapy, such patients may operate a private motor vehicle.

Pain due to coronary arterial insufficiency. Angina pectoris, coronary insufficiency and myocardial infarction are all indications of impaired blood supply to the myocardium; such patients should not operate commercial or passenger transportation vehicles. If angina pectoris is mild and controlled by therapy, then such patients may operate their private motor vehicle. The same is true for patients recoving from a myocardial infarction.

Emotional, neurological and psychiatric disorders. Emotionally disturbed patients should not operate a motor vehicle during such periods. Psychotic patients being treated outside an institution also should not operate a motor vehicle. When such individuals improve and are being treated with tranquilizing drugs, they should not operate a motor vehicle if they experience any adverse side effects such as drowsiness or slowed reaction time from the drugs.

Convulsive disorders. Seizures, including epilepsy in all forms, permanently disqualifies an individual from operating commercial or passenger motor vehicles and from operating his private motor vehicle until he has been free of such attacks for a continuous period of two years.

Vision

Adequate vision is essential for the proper and safe operation of a motor vehicle. Perhaps of equal importance to simple visual acuity, actually is the patient's perception of what he sees. As yet, however, we have no practical way of testing for faulty perception. At present, we believe all individuals with less than 20/40 corrected vision should not operate commercial or passenger motor vehicles.

Second in importance to visual acuity are visual fields. For safe operating of a motor vehicle one must, of necessity, possess some depth sense and lateral perspective in the horizontal meridian to judge correctly the position of approaching vehicles, as well as recognize approaching vehicles or pedestrians from the side. As a consequence, individuals with visual fields of 140 degrees or less, such as those suffering from severe glaucoma or retinitis pigmentosa with peripheral blindness, should not operate a commercial or passenger motor vehicle. However, they may continue to drive a private motor vehicle unless the visual fields are less than 110 degrees.

Ocular muscle imbalance, where diplopia occurs, has caused accidents. Therefore individuals with diplopia should not operate a motor vehicle. The one-eyed or aphakic individual should not operate a commercial or passenger transport motor vehicle. Those individuals acquiring a sense of distance may drive a private motor car.

A good color perception is necessary for all operating railway personnel. Also color blindness in the past has been considered a potential cause of highway accidents. At the present time, however, traffic lights have been standardized so color blindness, except for those engaged in driving trucks or busses, is not of any great consequence. Dark adaptation and susceptibility to glare are important in night operations of motor vehicles but at the present time no valid data are available as to their importance in the causation of motor vehicle accidents.

Hearing

Good hearing is essential for the operators of commercial or passenger transport motor vehicles. The wearing of hearing aids has not proved practical, particularly in noisy commercial and transportation vehicles. However, in the operation of private cars, individuals who successfully wear hearing aids frequently find them most useful.

Individuals subject to attacks of Meniere's Disease or sudden dizziness, no matter what the cause, should not operate a motor vehicle. When proper treatment has completely eliminated such attacks, then the individual can resume operation of a private motor vehicle but not a commercial or passenger vehicle.

Orthopedics

The individual must be in such physical condition that he can control a motor vehicle with safety. This means he must be able to reach and

have sufficient strength and dexterity fully to manipulate all controls required in the operation of the vehicle. The operator of a commercial or passenger motor vehicle must not be subject to ease of fatigue and at all times must be fully capable of controlling that vehicle.

Discussion

Here has been presented a resume of our knowledge concerning specific physical, mental and emotional impairments and our present understanding of their relationship to the safe operation of commercial or passenger motor driven vehicles. In addition we need to stress some of the personal characteristics associated with repeated accidents or with a high accident rate; these are (1) low intelligence, (2) youthfulness, and (3) egocentricity, aggressiveness, antisocial trends and social irresponsibility. In the course of all examinations of operating personnel, the physician should seek evidence of these characteristics.

Finally against this background of knowledge must the physician determine the capacities of the individual he examines to operate a commercial or passenger transport motor vehicle with safety. It is helpful, in assaying the safe operating capacities of these individauls, if the examining physician upon completing such an examination would ask himself this series of questions:

1. Does the employee have the personal characteristics of a safe operator?
2. Is he emotionally stable?
3. Does he fatigue more readily than normal?
4. Does he take drugs that might interfere with his ability as a safe operator?
5. Is he likely to be incapacitated by the drinking of alcohol?
6. Do the infirmities of old age, i.e., slowed reaction time, indecision, ease of fatigue, decreased vision, night blindness, etc., interfere with his ability to operate a motor vehicle with safety?
7. Does he have sufficient vision?
8. Does he have diabetes, vertigo or other disease likely to interfere with his ability to operate a motor vehicle with safety?
9. Does he suffer from any condition likely to cause a sudden loss of consciousness while on duty?
10. Would I be willing at all times to be a passenger with this individual operating the motor vehicle?

Conclusion

The physician is the only person able to ascertain the physical, mental, emotional or physiological impairments of an individual and to evaluate these disabilities in relation to that individual's safe operating ability. Obviously it is not always easy to arrive at a decision in these cases. Variations in severity of illness or degrees of impairments, variations in individual reactions and adjustment, and variations in individual response to medications are significant factors in evaluating each case. Nonetheless, it is the moral obligation and the duty of the physician both to the public and to the patient to exercise fully his abilities in properly assaying such examinations. Physicians thereby most significantly can make a contribution to reducing motor vehicle accidents and in contributing to a safer life for the public.

Bibliography

1. Brandaleone, H. and Daily, R. H.: A Method of Reducing the Accident Rate in Bus Operation — Selection of the Bus Operator. *Ind. Med. & Surg.* 19:231, 1950.
2. Brandaleone, H. and Friedman, G. J.: Physical Standards for Vehicle Operators — An Aid to Accident Prevention. *Ind. Med. & Surg.* 25:17, 1956.
3. Brandaleone, H., et al.: Recommendations for Medical Standards for Motor Vehicle Drivers. *Ind. Med. & Surg.*, 26:1, 1957.
4. Miller, S. E.: Drugs and Driving. *Journal of the Mich. State Med. Soc.*, 56:1131, 1957.
5. Miller, S. E.: The Physician and the Prevention of Motor Vehicle Accidents. *Medical Times*, 87:861, 1959.
6. Montreal Conference Foundation for Medical Research: *Medical Aspects of Traffic Accidents.* 1955.
7. New York University-Bellevue Medical Center: Medical Aspects of Motor Vehicle Accident Prevention. *New York State J. Med.*, 1956.
8. Woodward, F., et al.: Medical Guide for Physicians in Determining Fitness to Drive a Motor Vehicle. *J.A.M.A.*, March 14, 1959.

Status Symbols

Firms that give Cadillacs and other status symbols to executives are following sound business strategy, says George S. Odiorne, Director, U. of Michigan Bureau of Industrial Relations. Status symbols are needed to make up for moving into an upper-level job, which demands the sacrifice of leisure time, intellectual and artistic pursuits, and a normal family life. The executive job also requires a willingness to live a rootless life. Four possible compensations: elegant offices, with luxury furnishings; management clubs for every executive rank; custom housing, designed by the best-known architects; higher pay, to compensate for the "great leveling" in salaries over the past few years.

Would this create a social elite? No, says Odiorne. American society is not stratified according to business status alone. Intellect and taste also play a role. Says Odiorne: "Janitors and charladies may play in community symphony orchestras. Machine operators and secretaries may have finer tastes, more discrimination . . . than the president of the company."

—From *Industrial Relations News*, March 5, 1960.

WORK IN THE WORKS

A fictitious letter, from a British medical journal, provides a human insight into the practice of industrial medicine.

Dear George:

I'm very glad indeed to hear that you've decided to take the plunge and enter industrial medicine. But you'll find it different from anything you've done before. Not in its content, because patients are the same all the world over, but in its approach and its relationships.

People work, by and large, to earn money to buy themselves and their families as large a share of the world's goods as they can. Some really enjoy their jobs and get satisfaction from doing them — which isn't the same as saying that you or I would be satisfied with their jobs. (I once had a sanitary corporal in my regiment who took a real pride in his latrine buckets, all credit to him.) But many jobs are inevitably dull and frustrating and the opportunities for advancement negligible.

From the beginning, then, you'll not only be one of the team (spelt with a large or small "t" depending on your Managing Director), but also part of an intricate and constantly changing pattern of human relationships; and all your recommendations and suggestions will have to be seen against this background. Life can be very difficult for the production people at times. Ground between the upper and nether millstones of increased production on the one hand and improved conditions and shorter hours on the other, it is sometimes impossible to walk the tightrope of ideal Management.

I have a Manager just now who came up the hard way, industrious but rather humorless. He's cracking under the strain of a job that's just a little too big for him. Who does he talk to? If you're any good at your job he comes to you and asks your advice, especially about the physical symptoms which are the first cracks in the ceiling before the plaster comes down. This is one of the hardest and most rewarding jobs in industrial medicine. The confidences of the patient are inviolate, so that one can't intercede with the Directors on his behalf unless he agrees. Maybe he needs a temporary withdrawal from production on to planning or research staff to allow him to recover his equilibrium, just as the battle-weary officer would be withdrawn to a base job in war. One is asked for one's opinion: "What about old So-and-So, Doc, he's not looking too good. Is the job getting him down?" Remember that you'll wield tremendous power (it would frighten you if you thought of it) to alter men's lives; your opinions will be listened to by all from the Chairman down, and a man's career may depend on your recommendations. So ponder your words and think, in the watches of the night if you wish, of the import of what you do. Always remembering that you're not an actor on the stage but rather the prompter.

Whatever industry you enter will have its individual fascination. It's been my lot to work in heavy industries; so I'm almost certainly biased. I think that the heavier and more arduous the task the more character and spirit one meets among the workmen. If you expect the gentilities of a West End private practice you'll be disappointed. Instead you'll come to know men who are indistinguishable from the rock they hew or the steel they fashion but whose qualities will command at first your respect and later your wholehearted admiration.

You doubtless read the journals as I do and see how much in the last 10 years they are taken up with questions of pay and conditions of service. If you remembered what I told you, you'll have examined most carefully your own contract and conditions of service and have driven as good a bargain with your employer as possible.

One day soon you'll see a man whose femur has been fractured while at work. Overnight his income drops from fifteen pounds a week perhaps to six pounds, seven shillings. He doesn't grumble; he's very grateful to your medical service for what you do, and he speaks of the orthopaedic registrar who looks after him in the ward with awed reverence. When he hobbles back to work, to a light job on light money, he's once again grateful to you because you help him on the road back. The money laboriously saved for a summer holiday may have gone to clothe the children and pay the rent. But he accepts it as part of the job. Could you face

Authorized for republication by *The Lancet*, London. *The Lancet*, 1:7083, 1142, (May 30) 1959.

a cut of 50% on your salary with equanimity? I don't think I could.

Every industry has its lunatic fringe, its workshys, and its inadequate personalities and psychopaths. They're in the minority but they get more than their fair share of publicity. As I grow older (I had to give up playing rugger last year or face a divorce!) I see some of my younger colleagues confidently proclaim that A. B. is a malingerer. You know, when I can't find anything wrong the first thing I suspect is that my examination has not been good enough. I wish I had a pound note for every paper written to tell me how to distinguish the true back injury from the leadswinger. Have you ever hurt your back? Better still, wait till the Chairman comes in with a pain he got on the 14th tee or in the rose garden. Listen to the song-and-dance he makes, and next time you hear all about those so-and-sos with the bad backs at the Management Luncheon Club just smile and say nothing. In industry, as elsewhere, speech is silver but silence is golden.

Always keep a set of old clothes in your consulting-room or car so that you can go round your plant. I remember my disillusionment on meeting my Chief Medical Officer when I was a young and bright-eyed recruit to the firm. Thinking to show him the plant, I said, "What would you like to see, Sir?" "A large pink gin," was the prompt reply. The plant may look the same from week to week and may be singularly uninviting in rain, fog, slush, or (rarely) the heat of an August sun. But that is where your patients work, and that is where they will talk to you, and that is where you will really learn what they do. After 10 years I learn something new each time and I enjoy listening to men tell me about their work and showing me their quiet, rather shy, pride in a job well done.

A last word about money. One of the most irritating platitudes which will grate on you is that "A good medical service pays for itself." Surely this misses the point. Medical services are provided because workpeople are human beings and not machines. Surely it should be the philosophy of a forward-looking nation to make work as attractive, safe and healthy as possible. You should be there because your employer believes in you and your work, not because you save him money. And you don't, really, if you are honest. What you do is to increase the efficiency of the labor force, reduce the time lost from accidents and sickness, and make a lot of people a lot happier in their work because they know they can come and talk to you and blow off steam in privacy.

All this doesn't mean that you mustn't soil your hands with filthy lucre. On the contrary. If you're going to run a department you must be prepared to spend time in learning a little about costing and accountancy. You're no worse a doctor because you stoop to inquire the average cost per attendance in dressings or work out the cost of your service per employee per annum. Every other department has to do the same, so why should you be exempt? On the other hand don't let the accountants rule you. An old friend of mine, David Clark, put it very well when he described the auditors as white ants "nibbling away and eroding the fabric of human relations and good feeling." As he said, they want watching unceasingly.

Enough of these ramblings. I know you won't take them too seriously, but it's a pleasure to have a reason for getting them off one's chest.

Yours affectionately,

Uncle E.

Think a Little Louder Please

Scientists at one of the country's leading electrical corporations are seriously studying the possibility of using mental telepathy for long distance communication systems.

The head of the research team is convinced that brain-to-brain telepathy and other forms of extrasensory perception are real. His belief is based on a two year investigation of evidence supporting ESP, but, "A lot of work must be done before we can come up with anything practical."

ESP experimenters say telepathy is instantaneously sent and received. If true, this means it travels even faster than the speed of light. They also find that "thought waves" do not weaken with distance, meaning that no known form of energy is behind the "waves."

With man expecting to travel millions of miles into outer space within the next 20 years, such a means of communication would prove immensely practical. Great distances would be no barrier, messages could be sent and received instantly, and there'd be no charge for overtime.

The Physician and His Records

IN THE WITNESS CHAIR

• C. W. MUEHLBERGER, Ph.D.
Chief, Toxicology Section
Division of Laboratories
Michigan Department of Health

It has been pointed out that public health workers are likely to be called in two types of trials; criminal trials and so-called civil lawsuits, and the differences between the two are distinct and extensive. A criminal suit involves an offense against society in which the people are represented, usually by the prosecuting attorney, sometimes by the Attorney General or one of his staff. The prosecutor's job is to present facts and proof beyond a reasonable doubt. If a reasonable doubt remains concerning guilt, the jury is required to bring in a verdict of not guilty. On the other hand, civil suits are suits between individuals, usually over money or other valuable property, and the public is only indirectly involved. In such a civil suit the proof need be only by a preponderance of the evidence, and the jury will bring in, or the court will award, a verdict which it feels is justified by the evidence. Obviously, therefore, it makes a great difference whether the suit is criminal or civil, since the difference in degree of proof is considerable.

Among the things which are important in courtrooms are records concerning the case. When it comes to a question of records, what the court says is pretty much the law. There are some conflicts in the laws. One law tells a physician he must do a certain thing; another law tells the physician he must do something else, and the two sometimes conflict. For example, there is the matter of physician-patient privilege. Information which comes to a physician incidental to his diagnosis and treatment of a patient is privileged, and may not be divulged except with the patient's approval. On the other hand, if that information involves a communicable disease, it is necessary for the physician to impart that information to certain individuals, not just to the public health authorities, but perhaps to other persons for their protection, which is actually a violation of the previous law. The question of which law shall prevail in the event of a conflict is largely at the discretion of the court. What the court rules remains the law until a higher court overrules it, and a witness has no choice but to abide by the decision of the court which has jurisdiction in the particular matter in which he is testifying.

Adequate records are extremely important. Records do not speak for themselves; they must be identified, and that means that somebody has to take the witness stand and identify them, under oath. They should be identified by some mark, either by initials or by a signature; there must be something by which the individual can say, "Yes, I know that this is what I represent it to be because of these particular facts." These factors are all subject to cross-examination. The opposing counsel not only can but often does go into the question of how the witness knows that the record is what it purports to be. Certain entries made in the hospital records concerning treatment which was administered, or drugs which were prescribed, or procedures which were instituted may be introduced as evidence. Someone has to be able to testify as to what was done. If a doctor orders treatment in a hospital, then it is advisable for him to check to see that the order has been written on the case record by a nurse or an intern, and initial the record, indicating that he has seen and checked the order. At some future time, those initials may be of value in identifying that particular entry as evidence. Of course, most of the entries are not going to wind up in court, but if a doctor makes a practice of marking them all, it may save him a lot of embarrassment if they should. He will not have to say, "Well, I am sure I saw that, but

From *Legal Aspects of Public Health*, University of Michigan, School of Public Health, Continued Education Series, No. 81, 1959.

I cannot swear to it." Such a statement leaves much uncertainty when it comes to making an identification and unless the record can be specifically identified it may very well be ruled out by the court as being incompetent evidence.

Physicians and medical health officers may be called on to give two types of testimony, lay testimony and expert testimony. Just because a man has a doctor of medicine degree does not mean that he cannot be called as an ordinary witness. If he happens to see some particular occurrence he can be subpoened just like any other individual to tell what he saw. For coming into court and testifying as to what he saw or heard, he can claim only the same kind of fees as any other ordinary citizen. He is entitled only to the same consideration as any other citizen when he acts as an ordinary witness. However, when he comes into court and testifies to opinions based on what he has learned in his training in medical school and through his years of medical experience, he is serving as an expert witness. In such a case he is entitled to his expert fees, which should be agreed upon in advance.

One of the questions that comes up in court quite often, especially in civil suits is, "Doctor, you are being paid for your testimony, aren't you?" The expert witness is not being paid for his testimony; he is being paid for his time in court, for the time which he had to spend looking over the records, checking the x-ray plates, etc. His testimony is not for sale, but attorneys will often try to make it appear that the witness will sell his testimony to the highest bidder. The inference will be that if they had made a higher bid, they could have had the witness testify on their side.

There are many instances where the effectiveness of testimony can be increased remarkably by some rather simple procedures. Some of these procedures may seem fundamental, yet their omission can interfere with the effectiveness of testimony in court trials. One of the difficulties found with medical witnesses is poor witness stand behavior. The witness who exhibits fear on the witness stand or who acts as a know-it-all, has a bad effect on the jury. When called, the witness should walk to the stand alertly and assume a comfortable position in the witness chair. It is not necessary to sit ramrod straight, but he should not slouch. Quite often the witness chair is set off to one side. It is a good idea for the witness to turn in the chair so that he is partially facing the jury. Many jurors are elderly people who cannot hear too well. The witness should bear this in mind, and should talk loudly enough and clearly enough so that every person in the jury can hear everything said. There is nothing more disconcerting for a witness than to have the attorney and the court constantly prodding him to speak up.

Most jurors have an average education. They are not familiar with specialized terminology. The witness should remember that he is not talking to the county medical society; he is talking to 12 ordinary people, so he must talk to them in language they can understand. This means that he must translate practically everything into basic English if his testimony is to be effective. If he uses Latin terms that mean nothing to the 12 jurors, then he has wasted his time.

Another thing that is valuable is to look at the jury and talk to those who are interested. Some of the jurors will probably be half asleep; they are just there for the ride, to collect their fees. The jurors who are going to decide the case are those who are paying attention to the testimony, so the witness should talk to them. On the other hand, if the witness has a shifty appearance and will not look the jury in the eye, the jury may feel that he is spinning a good yarn but they do not believe it. If the jury does not understand the testimony, it is useless; if they do not believe the testimony of the medical witness, his testimony is worse than useless.

The witness's function is to answer questions, not to argue with counsel. That can be a hard thing to do, particularly during cross-examination, because lawyers can ask questions which nobody could answer by a definite yes or no. Of course, the witness never has to give a yes or no answer. He is the person who is under oath, not the attorney. If the attorney asks a question that cannot be answered by yes or no, and demands such an answer, the witness can simply turn to the court and say, "If the court please, that question cannot be honestly answered by either yes or no." Generally the court will tell the witness to go on and answer it in his own way, and then qualify his answer. The witness should bear in mind that the court will protect him from unfair questioning in which the opposing counsel tries to put words into the witness's mouth.

Philosophical skepticism is a wonderful thing. However, while the man who is not sure of anything may be a true scientist and an excellent medical man, he makes an unconvincing witness. There is a happy medium between the fellow who knows all the answers and the fellow who is not sure of anything. As has been mentioned, it is not wise for a witness to be too cocksure. When it comes to giving opinions, he should limit himself to that which he really

knows or can defend. He should not get too far out on a limb on an opinion which he cannot substantiate when it comes to cross-examination. It is always embarrassing to have to backtrack and admit that one has gone too far in direct examination.

Of course, in direct examination in any law suit, the attorney who calls a witness to the stand may not ask questions which are leading in character; that is, the attorney cannot literally put words in the witness's mouth. On the other hand, in cross-examination, opposing counsel's questions can be extremely leading in nature. The witness must therefore bear in mind the limitations of the attorney who calls him.

There are some exceptions to the hearsay rule. One exception concerns age. No one can state of his own knowledge when he was born; he must rely on birth certificates or statements by his parents, etc. Ordinarily, especially in criminal cases, a witness can only repeat statements which were made in the presence of the defendant. Conversation between the witness and some person who saw a criminal act performed is simply hearsay and may not be testified to. However, if a person is badly injured and about to die, realizes that he is about to die, and makes a statement concerning that situation implicating some other person, that statement may be repeated by the person who heard it. Such a statement is a so-called dying declaration, and is not subject to the hearsay rule.

Testifying before a jury requires a certain amount of showmanship and psychology. It is possible to utter words to the jury, even in basic English, that may be misleading. Sometimes photographs can be helpful, and gestures are always helpful. If the witness tells a jury in a shooting case, for example, that the bullet entered at the fourth interspace seven centimeters to the left of the midline, the jury does not have the foggiest notion of where the bullet hole was located. If the witness can locate anatomic areas by gestures, he can go a long way toward explaining to the jury what is meant.

Occasionally attorneys will bring in textbooks or standard books on specialties and try to cross-examine the witness from these books. It may be a standard book, but before the witness admits it is an authority, he should be sure that he agrees with everything that is in the book. First he should be sure that it is a recent edition. There is nothing more disconcerting to an attorney than to say, "It was a good book when it was printed 20 years ago, but a lot of new knowledge has been acquired since that time." If the witness is not familiar with a particular book, he should say so frankly because occasionally attorneys will inquire about a book which does not exist.

There are certain public health records which are open to everyone, such as those concerning vital statistics, but there are many records that are based on the patient-physician privilege. That privilege rests not in the physician, but in the patient; it is the patient's right to determine whether certain things may be divulged. However, the physician-patient privilege applies only to facts which the physician needs to know in order to diagnose and prescribe for the patient's illness, or to perform any act as a surgeon. It does not mean that everything a patient says to a doctor is privileged. If a man enters a doctor's office and says, "I just shot a man and he shot me in the arm," the fact that he said he shot a man was not essential for the doctor to make the diagnosis. If the doctor is asked about the patient's statement, he would be duty bound to answer the question.

There are many places where the physician-patient privilege overlaps onto the rights or the needs of the public. Where there is a conflict of interest between the patient's wants and the needs of the public, then the judge determines whether the physician-patient privilege can be abrogated in that particular instance and the physician required to testify about the situation. Some years ago the state of North Carolina decided that the question of physician-patient privilege may be abrogated by a trial judge at his discretion, where he feels that other interests override the interests of the patient.

Records of a confidential nature, if they are properly identified, may be brought into the trial as evidence. The physician or public health officer should notify the interested persons that such records are being subpoened. A subpoena is usually issued *duces tecum*, which means that the witness comes himself and brings with him all records pertaining to the particular case. If such a subpoena has been issued to a doctor, he should get in touch with the patient or the patient's attorney, or both, so that the patient will have an opportunity to enter objections, if he chooses.

Of course, there are many instances where the physician-patient privilege is waived. For example, a patient who sues a doctor for malpractice or sues him in civil court for anything, may not claim privilege to keep the doctor from testifying about what transpired. The fact that the patient is suing the doctor wipes out the privilege. If a patient gets on the stand

and testifies concerning his own medical situation and then the physician who actually administered the medical treatment to which the patient has testified at length is put on the stand, the patient cannot claim privilege that the physician may not divulge what he himself has already divulged. There are a number of instances, for example in insurance suits, where a man signs a statement saying that he is applying for insurance and that he has not suffered from tuberculosis, that no member of his family has suffered from tuberculosis, and that he has not received treatment for tuberculosis during the past couple of years, and it turns out later that he dies of tuberculosis. Of course, the privilege rests in his heirs, and they may object to the physician's testifying, but it is entirely competent to put a physician on the stand to testify, not as to what the diagnosis or what the treatment was, but to the mere fact that the man did apply for diagnosis and treatment, and that he received and paid for the treatment. Those things the doctor can testify to; but he may not testify to the nature of the diagnosis or treatment, without the approval of the patient. In a number of instances a person may be compelled to testify to the fact that the person did come for diagnosis and treatment, he was admitted to the hospital on a certain day, and he was discharged from the hospital on a certain day. What transpired in between may be privileged communication.

In any instance where a witness is subpoened, he has no recourse but to obey the subpoena, otherwise he may be cited for contempt of court. One cannot refuse to submit records on a court order. However, the person who might be injured by making such records public should be notified in advance, so that his counsel will have the opportunity to enter proper objection.

Decline and . . . Fall?

Although America's economy grew during the past century at a rate unparalleled in history, this pace has slowed during the fifties to the point where the United States today stands almost at the bottom of the list of major nations in terms of its annual rate of economic growth, a panel of 11 distinguished economists agreed in a forum conducted by the National Industrial Conference Board.

In making public the results of the Forum discussion, John S. Sinclair, president of The Conference Board, stated: "As we stand upon the threshold of the third century of this nation's independence, we face a serious challenge to our capability for future growth. The restored economies of Western Europe have not only grown more self-sufficient, but they also compete more vigorously for a larger share of world markets. Their rates of growth are significantly higher than ours in the fifties, as are those of Soviet Russia and other major powers. In fact, per capita output in the United States has shown little if any rise during the past five years, in striking contrast to the vigorous growth of the rest of the world."

Behind this sobering conclusion, the forum members agreed, is the fact that in the United States we have continued to preserve or expand the leisure of the individual even while raising his material standards. The American preference for more leisure may be among the factors contributing toward a lower rate of economic growth in this country than in others during the past decade. For generations Americans have made a similar choice — preferring more leisure to more goods — and it is possible that something must give in the U. S. structure of wage and capital costs that will improve our competitive position in world markets.

Some of the higher rate of economic growth in Western European countries or in the Soviet system is attributable to the low base from which they started as compared with ours, the Forum noted. Some is due to the more severe physical shortages in those countries after World War II and the resulting longer "catch-up" period. Nevertheless, many believe it possible that growth in the decade ahead may continue to be more rapid among the other world powers than in the United States.

A Decree Governing Occupational Medical Services In Spain

• RALPH F. SCHNEIDER, M.D.
Medical Director
Standard Oil Company (N. J.)

The following translation of a recent Spanish Decree governing occupational medical services in companies employing more than 500 persons is believed of unusual interest.

Reading through the lengthy decree published in Spanish, it is evident that (a) Spain is the first country in the world to establish a compulsory occupational medical service. (b) The regulations covering these services follow closely the medical policy of the Standard Oil Company (New Jersey). (c) Curative medicine has been completely eliminated. (d) Family members are not examined or seen by the company physicians. (e) Special emphasis is placed on placement medical examinations and the fitness of the applicant for the job he will be doing. (f) The Spanish government thinks that only young physicians are able to engage in occupational medicine. (g) The Spanish University now has a School of Occupational Medicine (this might also be the first such school, at least in Latin countries). (h) Special emphasis is placed on industrial hygiene. It is interesting to note that in cases of possible occupational diseases, it is the company physician who studies the case with consultants and arrives at a precise diagnosis. Only then is the case taken to the Compensation Board. Every case involving company employees must follow this channel. (i) Special consideration is given to all aspects of preventive, and particularly, educative medicine. (j) Medical ethics are well taken care of. (k) The function of the company as an advisor to management is clearly outlined.

Regulations Governing Occupational Medical Services in Spain

The following is a translated summary of the decree issued by the Spanish government in December, 1956, regarding the compulsory establishment of occupational medical services.

The complete regulations have appeared in *Medicina y Seguridad del Trabajo*, Volume 5, No. 18, January-March, 1957.

From *The Medical Bulletin*, Standard Oil Co. (New Jersey) and affiliated Companies, Vol. 18, No. 1.

Article 1. Occupational Medical Services is defined as the medical-labor organization oriented towards (a) the maintenance and the improvement of the health of employees; (b) their protection against the generic medical risks or those specific of occupations; (c) against common preventable pathology; (d) the adequate promotion of personnel towards the different occupations; (e) the biological maintenance aimed at the effective increase of their individual and collective efficiency and production.

Article 4. Any company or organization that employs 500 or more persons must have established an occupational medical service, as of December 12, 1956.

If they should have more than 1,000 employees, they have to have one physician for every 1,000 employees or fraction thereof. Those companies that have over 8,000 employees will add one more physician for every 2,000 employees above the 8,000 mark.

Article 5. The number of employees in a company are all those who work in installations of one company that are not more than 100 kilometers away from each other. If a company plant should be separated from another by a larger distance, each plant should be considered as a separate company as far as medical services is concerned.

Article 8. The Ministry of Labor can extend this compulsory medical service to those companies who, having less than 500 employees, are faced with special risks in their production activities that could affect employees' health.

Article 14. The physicians to be employed by the companies have to be selected from among those that completed their medical studies within the last five years.

Article 15. Any company who has to hire a physician to comply with this decree has to apply to the National Institute of Occupational Medicine and Safety. A list of qualified physicians will be given to the company by the Institute and the company will have a free choice of selection.

Article 17. A one-year course of study in Occupational Medicine to prepare physicians will be given at the National School of Occupational Medicine which is a branch of the Spanish University, created in January, 1948.

Article 19. Physicians taking the course mentioned in Article 17 have to complete the final examinations before being allowed to practice occupational medicine. Any physician can try to pass these examinations three times. If he is not approved the third time, he cannot try again.

Article 20. Short courses of 30 days' duration will be given at the same school to qualify physicians who have already had practical experience in occupational medicine or who have worked for industrial organizations. All such physicians will have to take this 30-day course within the next three-year period.

Article 27. In those companies having 2,000 or more employees and therefore employing two or more physicians, management will select one of them to be chief physician. The chief physician will carry out the usual medical activities plus relations with management, unions, etc.

Article 31. A doctor is not allowed to work for more than one company at the same time. This holds true even in cases when, before the decree, they held two or more such part-time positions.

Article 32. If at all possible the Medical Department should be located in the main office or management building close to the Personnel Department, with whom the Medical Department will be constantly in contact.

The minimum requirements as far as facilities are concerned are (a) a waiting room, (b) an out-patient clinic, (c) an examining room with enough space for x-ray equipment, and (d) an office for the physician. Space and facilities will be increased according to the number of employees to be taken care of.

Article 33. With reference to equipment, the minimum will be that necessary to carry out examinations and first-aid care plus (a) x-ray equipment, well protected and sufficiently powerful to do chest x-ray examinations, (b) a small laboratory to carry out basic analyses, (c) a basic industrial hygiene laboratory with the necessary facilities to carry out industrial hygiene studies within the plant in accordance with each company's specific industrial activities.

The clinical laboratory will be installed in one of the corners of the examining room.

The industrial hygiene laboratory, files, etc., can be located in the physician's office together with the necessary material for the industrial psychological examinations.

Article 34. Every workman will be examined once a year. The examination will include a careful medical examination plus a psychotechnical examination. The results of the examination will be written down on individual charts.

Article 35. Every time that the company physician discovers or diagnoses a nonoccupational disease, he will refer the patient to the family physician under the social security program with a note telling him of his findings. The company physician will also advise the head of the Personnel Department that the employee has been referred to a private physician.

In cases of occupational disease, the same procedure will be followed except that the patient will be sent to the National Institute of Occupational Accidents. In these special cases, the patient should be sufficiently studied by the company physician so that he may have been able to arrive at a precise diagnosis.

In cases of physical defects unrelated to sickness but that could affect his general working capacity or affect his capacity for the specific job that the employee does, the company physician should contact the personnel manager for a possible change in occupation.

Article 36. No employee will be hired without a placement examination. This examination will have the following purposes: (a) diagnosis of possible contagious disease; (b) evaluation of the general working capacity of the applicant; (c) determine the applicant's fitness for the job he is supposed to do; (d) determine whether the applicant has a predisposition towards diseases that could appear as a result of the work he will be doing; and (e) fill in the necessary medical records. In all these cases of examinations, the company physician should follow the indications given by the Institute and use the forms which will be supplied for this purpose.

Article 37. In all cases of disability of more than 15 days (unless taken care of by social security), the employee should be examined before he is allowed to return to work.

Article 38. All workmen who carry out activities that are considered especially toxic, dangerous, or unusually heavy, should be examined repeatedly, as follows: (a) heavy physical work, every six months; (b) occupations connected with the handling of solvents, lead, mercury, arsenic, powders and radioactive materials, every six months; (c) those exposed to inhalation of gases, fumes, vapors, or toxic fog every six months; (d) those submitted to compressed air, every month.

Article 39. Eventually the company physician should also examine all those employees who are referred to him for that purpose by the personnel manager or department heads. Such referrals could be as a result of a decrease in their individual work efficiency or because the patient himself wishes to consult the company physician due to certain symptomatology.

It is to be understood that under no circumstances will the company physician adopt a curative attitude in cases that he examines.

Article 40. The company physician will receive from the personnel manager or department heads individual reports on the adaptation of new employees to their newly-assigned duties.

Article 41. The company physician should survey the company installation, industrial processes, products used and manufactured, etc., from the point of view of industrial hygiene.

He should also analyze every activity carried out by company employees, so as to determine the physical requirements for every job.

Article 42. With this information (Article 41) he will prepare a study which he will re-evaluate annually.

The Institute of Occupational Medicine and Safety will assist the company physicians in investigations that the physician feels he is unable to handle himself.

Article 43. Any preventive measures that could be recommended as a result of these Industrial Hygiene studies and any new ones that should be indicated as a result of new methods of industrial processes, etc., should be reported to management by the company physician. This will be done after the Department of Industrial Hygiene of the National Institute of Occupational Medicine and Safety is advised of the procedures recommended by the physician.

Article 44. The physician is bound by his oath not to communicate to anybody any of his medical findings arising as a result of his occupation.

Article 45. The company physician will dedicate special attention to the placement and periodic examinations, professional selection and medical observation during the apprenticeship period.

Article 46. The company physician will advise management regarding installation and maintenance of adequate general hygiene services (mess halls, showers, toilets, drinking water fountains, etc.) as well as vacation periods, vacation camps, etc., if the company should have such facilities.

Article 47. In case the social security physician should not be available, the company physician will take care of the initial or first-aid treatment in accident cases or unexpected sickness that should occur during working hours.

Article 48. The company physician will give advice to the employees regarding health problems that they or their family members might have. To do this he will set aside a few hours a week, during which he can be consulted without loss of working time.

The company physician will give advice to management regarding all activities that might involve medical aspects, social security programs, permanent disability or pension plans, etc.

Article 49. The company physician will recommend to the employees the type of sports that they should engage in, with the object of maintaining and improving their individual health and energy. The company physician will develop a preventive educational campaign for company employees aimed against disease and accidents. He will organize information campaigns so as to arrive at this objective through the most effective systems and procedures.

Article 51. In conjunction with the safety technician, the company doctor will select and instruct the necessary workmen in first-aid training. This will allow these men to give first-aid to their fellow employees in cases of electric shock, drowning, accidents and sudden intoxications, victims of explosions, etc.

Article 52. Every single accident that occurs in company installations will be carefully analyzed by the company physician and the safety technician and both will submit a report to management with their specific recommendations.

Article 53. Aside from all other procedures already outlined, the company physician will have an active part in the program of increasing individual efficiency among company workmen, together with production supervisors, head of departments, etc. The company physician will study the efficiency production charts, analyzing the possible biological causes of any decrease. He will then indicate the psychic or somatic measures to be adopted with the object of increasing production if this is possible. He will also indicate any changes that may be in order to adapt the industrial processes to the capacity and biological aptitude of the workmen.

Article 54. The company physician will carry a record of the common disability cases that occur among company employees. In this case, he will therefore act as a private inspector of the social security system. He will keep management informed of the periods of disability.

Article 55. In cases of any medical-legal problems, the chief physician will act as the company representative, giving his point of view and having the right of vote in subjects that pertain to his profession.

Article 57. The company physician will prepare an annual statistical report on the activities of the medical department during the first 15 days of each year. This report will be sent to the National Institute of Occupational Medicine and Safety and will include (a) the number of placement medical examinations carried out and the results, (b) the number of periodic examinations, and (c) the number of dispensary visits for first-aid and emergency treatment, etc.

Article 59. The necessary auxiliary personnel for the Medical Department will be employed by the company according to its needs.

The Relationship of the

OCCUPATIONAL ENVIRONMENT

to Chronic Diseases

• THOMAS F. MANCUSO, M.D., M.P.H.
Chief, Division of Industrial Hygiene
State of Ohio, Department of Health
Columbus, Ohio

The progress of industrial health has been proportional to the climate of the times and to the strength of the persons in the field in skills and numbers. There has never been more than a fraction of the industrial health staff that is really needed to study the thousands of occupations and their allied diseases. What is required is a determined, coordinated effort and long term studies of industrial groups exposed to different chemicals and occupations.

The relationship of the occupational environment to chronic diseases may be considered from two vantage points. First, the chronic diseases caused by the environment, and secondly, the chronic diseases that come into the working environment.

In the first category let us identify the areas of discussion. Chronic diseases to be considered are those precipitated or caused by the working environment that are persistent from several months to a number of years. The occupational chronic disease may affect a single organ, multiple organs or a system of the body such as the respiratory or central nervous system. Dosage and duration of exposure and latent period are factors that influence the development of chronic diseases. Although an exceptionally high concentration of a chemical could produce a long-lasting effect, usually the high exposure of short duration produces acute illness, and lower exposure of a longer period of time results in chronic occupational diseases. For some substances an initial exposure may produce a chronic sensitivity, such as occurs from an exposure to toluene di-isocyanate.

Identification and Correlation

When one considers the hundreds of chemicals and their combinations that have occurred in industry in various forms for which only limited toxicological information is available, the potential human effects constitute a formidable problem. More significant, however, is the comparative lack of toxicological data on the effect of low concentrations of toxic substances over a prolonged period of time on humans, and the problem of the long latent period which has been recognized so far for relatively few

diseases. Associated with this has been the absence of adequate sensitive organ function tests for the physiological testing of the chemical effects of low concentrations among exposed workers.

There have been, too, inherent problems in the study of population groups exposed to specific chemicals or combinations over a period of years. The absence of adequate records covering some 20 prior years with identifying population characteristics and employment exposures has constituted the broadest obstacle. Personnel records, incomplete and not uniform in the various industries, are frequently destroyed after a period of years. Employee migration, the interrelation of changes of employment in the same and other industries; the effects of exposures in different time periods and the age of the worker at the time of exposure represent some of the difficulties in studying occupational groups over a long period of time, for the recognition and identification of chronic diseases due to the working environment.

The relationship of chronic diseases to the working environment actually constitutes our area of least knowledge because of the difficulties already enumerated. However, there are still further variables that must be considered in determining and differentiating whether the chronic disease is due to other causes or to the working environment. The association between socioeconomic status and cause of death has been established. For example, cancer of the lung, bronchus and esophagus has a consistent above-average incidence among men of low socioeconomic status. Nativity (such as the foreign born) has been found to be associated with specific cancers as well as other diseases. The duration of residence or the residence exposure years has a bearing on the influence of urban or rural living, on the effects of air pollution, as well as the availability of medical care. Finally, there are patterns of living, nutrition, drugs, hobbies and habits that may affect disease development, particularly chronic disease.

Chronic Diseases Due to the Working Environment

There are a number of broad categories of occupational exposures that may cause chronic diseases. These are dusts, inorganic and organic; gases; fumes; vapors and mists; radiation; noise, and infectious agents.

I shall not attempt to list all the chronic diseases known, but rather will cite some illustrations. Single and multiple organs may be affected by a variety of chemicals. The chlorinated hydrocarbons have produced chronic changes in the liver and kidneys. An organ may also be affected distant to the site of exposure; for example, tumors and cancer of the bladder following the inhalation of betanaphthylamine in the manufacture of dyes. The effects on these organs may not be apparent until months or years after exposure has occurred, or long after exposure has ceased. Frequently, neither the families nor their physicians associate this particular disease or death with employment because of the so-called latent period, the long time it takes between occupational exposure and the actual development of the disease.

The respiratory system is the most frequent site of chronic diseases. The most commonly recognized diseases are the pneumoconioses, such as silicosis, asbestosis, and coal miners lung diseases due to the inhalation of certain dusts. The pulmonary changes are principally those of fibrosis which presents certain identifying x-ray and clinical characteristics. These diseases may last for many years and produce varying degrees of disability from temporary to permanent. Unfortunately, in a number of states in the case of silicosis and other lung diseases due to occupational dusts, an individual with demonstrable lung disease and moderate or severe disability is not entitled to medical expenses and the case is disallowed for compensation, unless he is totally disabled. Associated with the lung diseases is the effect on the circulation and the subsequent enlargement of the heart as a compensatory mechanism.

Recently, "farmer's lung," a serious and disabling disease, has been recognized. The disease is due to the inhalation of dusty, moldy organic materials which leads to the development of granulomatosis with associated interstitial fibrosis. This is mentioned as an illustration of the existence of a chronic disease previously unrecognized and raises the question as to how many others similarly exist in the industrial working environment, because of the wide range of chemicals used for which there has been no adequate testing or observations for chronic effects.

Ozone, a gas, is one of the oxidizing respiratory irritants which has been found to produce a chronic bronchitis and fibrosis in animals. There are also gases of related chemical structure whose effects require evaluation and recognition among workers exposed over prolonged periods of time. Nitrous oxides, for example, also produce chronic bronchitis and fibrosis.

The central nervous system has been affected by manganese dust so that the disease develops remarkably like multiple sclerosis. Seriously poisoned victims are lifelong cripples and often unfit for any gainful employment. The vapors of a solvent, carbon disulphide, produce a myriad of disease problems of long duration, including

weakness of the legs, atrophy of the muscles and psychoses. Chronic blood changes have occurred due to exposure to benzol in the form of leukemias and aplastic anemias. Bones have been affected by cadmium and chronic poisoning developing peculiar osseous lesions and gait disturbances, as well as by fluorides. Occupational and pathological evidence has been established that the heart will be affected by antimony trisulfide and the heart is also affected as part of the brucellosis syndrome.

In addition to these illustrations there are other occupational exposures which produce chronic diseases. Radiation, of course, produces leukemia, aplastic anemia and cancer, although the exact amount required to cause these developments is still a matter of controversy. Industrial noise can produce permanent deafness. Infectious effects of the working environment such as the development of tuberculosis in sanitariums and hospitals and brucellosis in the meat packing industry are fairly common chronic diseases.

This brief review indicates that all the various systems of the body can be affected by the working environment to produce chronic diseases. Undoubtedly the difficulties for studying differences of such diseases from other causes makes recognition difficult. However, the serious criticism remains that comparatively few attempts have been made during the years to study the long-term effects of the various chemicals and exposures of the working environment. Regardless of the limitations of methods involved, many industries have never been visited or studied as far as health hazards are concerned, and the same point applies to chemicals singly or in combination. It appears that we move on from one industrial era to another, without having fully explored the occupational health problems of either one. We have allowed many years to pass by, each year with more chemicals and industries adding to the picture of the unknowns, without ever really finding out what has happened and has been happening to the industrial populations.

Chronic Diseases in the Working Environment

First, let us consider the recognition by compensation authorities. The adoption of legislation in some states for the employment of the handicapped has led to the introduction and continuation of a significant population with chronic diseases in the working environment. For example, in the state of Ohio persons with any of the following diseases or conditions may be employed: (1) epilepsy, (2) diabetes, (3) cardiac disease, (4) arthritis, (5) amputated foot, leg, arm or hand, (6) loss of sight of one or both eyes or a partial loss of vision of more than 75% bilaterally, (7) residual disability from poliomyelitis, (8) cerebral palsy, (9) multiple sclerosis, (10) Parkinson's disease, (11) cerebral vascular accident, (12) tuberculosis, (13) silicosis and (14) psychoneurotic disability following treatment in a recognized medical or mental institution.

Accordingly, compensation is awarded under the following conditions: (1) when a handicapped employee is injured, disabled or diseased due to injury or occupational disease, and when it appears that injury or occupational disease or death would not have occurred but for the pre-existing physical or mental impairment of the physically handicapped persons; and (2) injury due to aggravation when the resulting disability or death is caused at least in part through aggravation of such employee's pre-existing disability. In the interpretation of such compensation, if, for example, an individual has heart disease and he receives some trauma which is considered to have aggravated his heart disease and the individual requires hospitalization, medical care, etc., compensation is then provided until the individual returns to the physical condition prior to the injury. In a large number of cases this recovery may not occur at all. The point that I am making is that employment of these chronic diseased workers requires, in effect, a large scale hospital and sickness coverage for a sizeable segment of the population with chronic diseases by the compensation authorities and, at the same time, this fact places an additional requirement on industry for the need for superior medical and nursing programs and the proper placement of these handicapped persons in areas and occupations least likely to affect their health. The laudable objective of hiring the handicapped has, in effect, changed the complexion of the responsibility of compensation authorities as well as industry and makes chronic diseases of primary importance as they relate to the working environment. The socioeconomic aspects are, of course, readily apparent.

Aside from the legislation and compensation concerning the chronic diseases as they relate to the working environment, there are additional areas that require consideration. This pertains to mental illness and the use of tranquilizers. The advent of the use of tranquilizers has led to the change of policy in the treatment and release of mentally ill persons from state institutions so that a large number is entering the employment market. The problem here revolves around the need for coordination and observation of the patient between the mental institutions and industry. These persons need the best of medical assistance and counsel and

yet the lack of coordinated planning and observation has left their hope of success in both their living and employment in industry as one of pure chance. This chronic illness and that of related emotional disturbances requires the utmost supervision in industry and the most qualified understanding of industrial nurses, physicians and personnel officers. The connecting link, however, is the family physician and the need for cooperation and observation with the industrial medical departments. Circumstances of work in industry, if not properly controlled and evaluated, can cause considerable, if not permanent, damage to the individual, as well as to the other employees. A responsive, supportive climate is necessary for the emotionally disturbed persons who are employed in industry. It is necessary, therefore, that there be a planned program between the hospital, community resources and industry to facilitate the employment and supervision of the emotionally ill-adjusted person as is done for the handicapped person.

The national interest in chronic diseases of all types has caused a shift of emphasis and direction in local communities so that there is an increased awareness of chronic diseases and this has led to a motivated enlargement in case-finding procedures. These community efforts are directed at chronic diseases per se and bear no relation to whether they are due to occupational exposures. There is a need for the development of understanding and appreciation of the community resources, both voluntary and official agencies, and the coordination of effort between the industrial medical departments and these community resources.

Another aspect of chronic disease relates to the pattern of hospital and sickness insurance derived from labor-management contracts which include coverage for the nonoccupational diseases. This expansion of the medical coverage would indicate that a higher level of industrial medical departments is required and that the operations of the medical departments may provide an index of community health.

Associated with this is the increasing importance of knowing the physical health status of each prospective employee at the time of exposure and the development of attitudes to the employment of persons with chronic diseases which may be considered different from the prevailing pattern in industry. In this respect it is necessary for the general practitioner and the industrial physician to get into the plant to observe the working environment and the various job requirements. It is only with this understanding that proper placement of workers with chronic diseases can be made. This is necessary to avoid aggravation of pre-existing conditions. Basic, too, are health orientation programs for new employees in protection and safety measures and in plant health and safety committees to provide for a continuous effort of health protection for all employees, particularly those with chronic diseases, as well as the localization and identification of the hazards within the plant. Because of these various medical insurance programs there does exist the opportunity to make observations on large industrial populations in industry.

Summary

Progress of industrial health, in essence, has been proportionate to the climate of the times and to the strength of the persons in the field in skills and numbers. The relationship of the occupational environment to chronic diseases can be considered in retrospect according to the conditions prevailing in different time periods; the status of effort and interests in industrial health; the level of thinking and demand for action; the funds, personnel and limitations of scientific instruments and research. In order to recognize and identify occupational diseases, whether they are acute or chronic, studies of the working environment are required to ascertain the association of specific chemicals and the effect on the worker populations. There never has been, nor does there now exist, more than a fraction of the industrial health staff needed to study the many thousands of industries and occupations of the various states.

Some of the problems relating to the recognition of chronic diseases that have been previously enumerated can be overcome, for example, through other resources such as the records of the Bureau, Old-Age and Survivors Insurance, Social Security Administration. The situation is far from hopeless. All that is required is that there be a determined coordinated effort and that long-term industrial studies of industrial groups exposed to different chemicals and occupations be planned.

TENNIS ELBOW

• JAMES WALL, M.D.
General Electric Company
West Lynn, Massachusetts

During the past four years, the cases of tennis elbow served in this industrial dispensary were treated by injections of hydrocortone acetate. Approximately 83% were relieved by this therapy, usually without loss of time from work.

The purpose of this paper is to present our experience with the treatment of a painful lateral elbow by the injection method. This condition is commonly referred to in the literature as "tennis elbow" or epicondylitis. Over the past four years we have accumulated a series of 95 of these cases among the workers at the River Works General Electric plant. The condition is a fairly common one among our workers. These were treated by William Simonis, M.D., formerly on our medical staff, and myself. Hydrocortone acetate or metacortone have been used with about the same degree of effectiveness. The method described is a simple, safe, and effective way of treating the condition.

Etiology

Tennis elbow or lateral humeral epicondylitis is a painful condition of the lateral aspect of the elbow joint usually occurring in individuals whose occupation requires frequent pronation-supination movements of the elbow joint, particularly against some form of resistance. Its occurrence in tennis players who use the forearm in such a manner has led to the term "tennis elbow." Among our workers it is not uncommon in carpenters, in those who use heavy wrenches repeatedly, in those who use the elbow in such repetitious motions as pulling on levers. In some it may occur without engaging in such activities. In reviewing our statistics, 50 patients gave a history of striking the elbow against some object with the subsequent development of a painful area over the lateral aspect of the elbow which would be aggravated by twisting motions in a supinating direction against resistance, by attempting to lift objects with the forearm in a pronated position and often by merely shaking hands.

In 45 cases there was no history of a direct blow to the elbow, but the painful condition followed a single straining type of injury or developed in the course of repeated motions of the elbow peculiar to the type of work in which the individual was engaged. In the majority of cases it occurred in the right elbow (62 cases, and 33 in the left). We found five cases that involved the medial epicondyle in which the pain would be aggravated by motions involving the flexor-pronator muscle group. Thus motions against resistance in a counterclockwise direction or lifting with the forearm in a supinated position were more likely to produce discomfort.

Pathology

The exact pathology involved in the condition is somewhat obscure. Some consider it a partial tear of the conjoined tendon of the extensor-supinator group of muscles principally of the extensor carpi radialis brevis muscle or a tear between the tendenous origin of the muscle and the periosteum over the lateral epicondyle of the humerus with a subsequent traumatic periostitis. Others refer to it as a fascioperiostitis. In rare instances an inflamed bursa can be demonstrated between the conjoined tendon and the radiohumeral joint.

Moore (*Surgical Clinics of North America*, October, 1953) describes the finding of radiohumeral synovitis in an appreciable percentage of patients with tennis elbow. He has found an inflamed synovial flap projecting from the synovial lining of the elbow joint, interposing itself between the head of the radius and the

capitellum. This flap may be pinched repeatedly in varying degrees during daily activity with subsequent hyperemia and edema and with resulting pain on supinating the forearm against resistance. He has performed operative removal of this synovial fold in 16 patients with relief of symptoms.

It is our belief that the lesion is a traumatic one, involving the periosteum over the lateral humeral epicondyle and the inserting fibers of the conjoined tendon, a fascioperiostitis with local edema and perhaps adhesion formation. The success we have had in our treatments would seem to place the site of the trouble in the epicondylar region outside the joint capsule, though in a given case or cases an inflamed radiohumeral bursa or radiohumeral synovitis might be found as a cause of painful lateral elbow.

Diagnosis

Inspection of the elbow may reveal little, but often one may be able to see a definite swelling or fullness over the lateral epicondyle of the humerus which may also extend over the radiohumeral joint. On palpating the area there is no elevation of local temperature but one may feel a definite increase in elasticity or a definite thickening of the soft tissue over the epicondyle as one compares it with the same area on the unaffected elbow. The swelling is demonstrable if the elbow is examined in a flexed position midway between pronation and supination. The area over the epicondyle is tender to pressure. Motions in the point are free and passive. Motion is not uncomfortable. When active extension of the wrist against resistance or supination of the forearm against resistance is carried out, there is usually pain over the affected area. Another maneuver which elicits discomfort is to have the forearm fully pronated and the wrist flexed and have the patient clench the fist tightly. In all instances the conjoined tendon of the extensor supinator muscle group pulls on the affected area over the lateral epincondyle, causing pain. Many patients also complain of weakness in the elbow on lifting with the forearm pronated.

In 68 of our cases x-rays of the affected elbow were taken to rule out injury to the head of the radius when there was a history of a direct blow to the area. In only seven were there positive findings in the form of a small deposit of calcium adjacent to the lateral epicondyle, representing probably local changes in the soft tissue associated with the primary pathology and not the primary cause of the condition.

Treatment

Various forms of therapy have been advocated. Some have claimed satisfactory results by manipulation. With the elbow in extension, the forearm is sharply adducted. This is carried out with the forearm pronated fully, then supinated fully and in midposition. The object is to convert a partial tear in the conjoined tendon to a complete tear. Then, when repair takes place with lengthening, the strain or pull on the inflamed epicondyle is relieved and symptoms subside. We have had no experience with this method. The proposed partial tear in the conjoined tendon appears theoretical and not a proved entity. In discussing the treatment of the condition with local orthopedic specialists, the manipulative form of therapy is not used by them to any significant degree.

Local forms of diathermy, such as infrared inductotherm and hydrocollator packs usually have produced no great improvement. We used one of these forms prior to adopting the injection method and for a while used it in the course of treatment before subjecting the patient to an injection. Results were so unsatisfactory that we have limited routine use to mild cases.

Operative methods also have been used. The origin of the conjoined tendon on the epicondyle has been divided transversely. This is said to allow repair of the tendon with slight lengthening, thereby removing the localized traction on the painful periosteum. In the course of such an operative procedure, search may be made for an inflamed radiohumeral bursa and, if found, excised.

Another method has been the use of x-ray therapy. However, with recent stress on the need for cutting down on x-ray exposure in the general population a safer method would appear more desirable. Also, this method is beyond the scope of the facilities available at the usual industrial dispensary and would be a matter of referral to an outside specialist.

Also used in the past has been plaster immobilization of the elbow for several weeks. In the industrial case this would prevent the worker from engaging in his regular activities or he might lose time from work for a long period. This treatment is not conducive to a low lost time rate.

Preferred Method

The method we use was adopted when the adrenocortical steroids suitable for intra-articular, intrabursal or into soft tissues became available. For the most part the saline suspension of hydrocortone acetate containing 25 mg per cc has been used at our dispensary. With the patient lying down, the right elbow is shaved, washed, and prepared with Zepheran and draped

with sterile towels. About one cc of 2% novocaine is first injected intradermally and then into the soft tissue over the lateral epicondyle. This preliminary use of novocaine makes the subsequent injection less uncomfortable. Then one cc of hydrocortone acetate is injected. The needle is inserted over the epicondyle and extended down to bone. It is then withdrawn slightly and inserted into the conjoined tendon, injecting the medication in a circular fashion like the spokes of a wheel so that an area of about two cm is infiltrated. A small dressing is then applied, a Band-Aid suffices. The patient is then given a small supply of empirin compound with codeine. The elbow usually is quite sore that night. The acute exacerbation of pain usually has subsided by the following morning. Improvement usually will continue over the first few days post-injection with complete relief or marked improvement noted at the end of that time.

Results

We have injected 95 cases of epicondylitis. We have included five cases of medial epicondylitis in our series since the pathology is the same though occurring on the inner aspect of the elbow. Follow-up on seven cases was not obtained. Some workers were transferred, retired or otherwise unavailable for evaluation following therapy. Of the 88 cases remaining, 58 or 66% were relieved by a single injection and had no further known recurrences. Ten patients or 11% required two injections for relief. Of these 10, only one required two injections in series. The other nine had initial relief from the first injection but after a period of several weeks reported to the dispensary again with histories of further injury with recurrence of symptoms. These were successfully relieved by a second injection. Three patients received three injections and two patients five injections, all reporting initial alleviation of symptoms after injection but reporting recurrence of symptoms after reinjury. All five were finally relieved. Thus 73 or 82.9% were relieved by this therapy.

Five patients reported they were improved after treatment and bothered only occasionally, the discomfort being mild so that they did not feel they should return for any further treatment. Thus, a total of 88.6% were either completely or significantly relieved by treatment.

Ten patients were considered as not satisfactorily relieved. Three of these received temporary relief but went to their own physicians on recurrence of symptoms. One of the three was relieved by x-ray therapy, one received further injection therapy and was relieved, and one was treated by his own physician by immobilization in a cast for one month and in a sling for another month. He was out of work for 12 weeks with this form of therapy. Further injection therapy could possibly have eliminated this loss of time. One patient with unsatisfactory results had temporary improvement after two injections but refused further therapy on recurrence of acute soreness. Another with unsatisfactory results noted improvement after five injections but on further recurrence was found to have an elevated blood uric acid level and was referred to his own physician for treatment of gout. Five others after only temporary improvement after injections were referred elsewhere for further workup to rule out rheumatoid arthritis or other causes of joint pain. One of the five is still being treated by our orthopedic consultant by injection therapy, one was operated on and an inflammed radiohumeral bursa excised with relief of symptoms. No follow-up is available on the other three. However, even in the 10 considered as unsatisfactory results, temporary alleviation of symptoms was obtained by injection therapy.

There have been no untoward reactions or complications. The only drawback is the rather acute but temporary discomfort that frequently occurs several hours after the injection over the lateral aspect of the elbow. Patients are told that this may happen and are advised to apply heat locally or an ice pack if the heat aggravates discomfort, and to take the medication supplied. They are usually able to continue working the following day, favoring the elbow by avoiding heavy pulling or twisting motions. After the first few days they are usually free of any significant discomfort. The majority of patients have been relieved by a single injection. Some have required two or more injections. Only a small percentage were considered as unsatisfactory results, but even in these some improvement was realized.

Summary

In an industrial dispensary 95 cases of tennis elbow or epicondylitis have been observed within the past four years. These 95 cases were injected one or more times with hydrocortone acetate. 73, or approximately 83% were relieved by this therapy and usually without loss of time from work.

This report is the result of one committee meeting of experts in a series of international scientific gatherings which have been organized by the International Labour Office so that experience on the various aspects of pneumoconioses may be compared.

An International Classification of Radiographs of the Pneumoconioses

In accordance with the results of the preliminary investigation, the experts meeting in Geneva in 1958 agreed to accept the fact that the Sydney classification, valuable as it was for the radiological appearances of pneumoconiosis in coalminers, was not ideal for the classification of certain radiological appearances encountered in other industries. They recognized that a single classification could not apply to all the existing forms of pneumoconiosis, and that for this reason it was desirable not to consider the pneumoconioses of vegetable origin, which are radiographically very different. They therefore decided to confine their attention to the pneumoconioses provoked by mineral dusts.

It was clearly stated that the classification should describe the radiographic appearances of the persistent opacities associated with pneumoconiosis (the word "persistent" was introduced to exclude transient opacities). The qualitative and quantitative aspects of these opacities should only constitute one factor in the diagnosis of the pneumoconioses. They must always be related to the occupational history and to the appropriate clinical and laboratory findings.

Value of a Single Classification

The difficulty of using a single classification for the radiological appearances of all the pneumoconioses provoked by mineral dusts was clearly stressed. It was certain that, especially in the early stages, there might already exist great differences according to the nature of the dusts and their silica content, and according to the industries under consideration. From a strictly scientific point of view each type of pneumoconiosis should probably have its own classification, but it was also recognized that radiological shadows were often similar, whatever might be the chemical composition of the dusts or the industry in which they were encountered. Nevertheless, the experts agreed that there might be difficulties in bringing the very different radiological appearances of certain pneumoconioses, such as asbestosis and berylliosis, within the classification.

Object of the Classification

The object of the classification was to codify the radiological appearances of the pneumoconioses in a simple reproducible way. This would enable statistical and epidemiological investigations to be undertaken to assess the size and nature of pneumoconiosis problems and determine the steps to be taken for the control of the disease. The classification was not intended to define pathological entities, nor to take into account the question of working capacity. It would have no relation to the legal definition of stages of pneumoconiosis for compensation.

At the end of the general discussion, the experts adopted a definition for the classification as follows: "International classification of persistent radiological opacities in the lung fields provoked by the inhalation of mineral dusts." They intended that this definition should cover all coal and carbon dusts.

Opacities

Three main groups of opacities were recognized: linear opacities, small opacities and large opacities.

Linear Opacities

Several sittings were devoted to discussing whether linear opacities should be accepted in the classification and, if so, how this group should be defined. Although there was complete agree-

The full report appears in *Occupational Safety and Health*, April-June, 1959.

ment that linear opacities could be seen in those who had never been exposed to dusts, it was held by some experts that they occurred with greater frequency among workers exposed to dust in industries other than coal mining. The experts also agreed that the pathological changes of pneumoconiosis could be found in the lungs in the absence of radiological abnormality, and in particular it was mentioned that, in the case of South African miners with long service underground, a close correlation existed between linear markings seen on the radiograph and micronodulation found at autopsy. On the other hand, evidence was brought forward that, in the case of coalminers, there was, on the average, more dust and more pathological change in lungs which had shown small opacities on the radiograph than in those where the x-ray picture was within normal limits.

A divergent point of view was that these linear shadows would be better accommodated in a second classification for radiographs of those exposed to a greater silica risk. It was, however, argued against this that as the experts were only concerned with describing radiological shadows it should be possible to get them all into one classification.

The importance of early diagnosis in prevention was appreciated by all, and arguing on these lines it was agreed that at least the first stage in the classification should enable workers to be diagnosed before their health was affected or their future jeopardised. Evidence was forthcoming that, as regards coalminers, category one fulfilled these conditions, but in other industries, where the silica hazard was greater, it seemed improbable that this was so. Agreement was thus reached to accept a linear category in certain industries on a trial basis.

After a further lengthy discussion, it was decided to divide the linear opacities into two categories. The first, denoted by the symbol "Z," was accepted as a "warning stage" outside the classification, which could be used as seemed desirable in any particular industry for the purposes of prevention. The experts agreed to define category "Z" as "increased lung markings."

The second category of linear opacities denoted by the symbol "L" was placed within the classification, but it was agreed that it would not apply to coalminers and that its use in any other industry was left to the discretion of the medical officer in charge. As several experts considered that this category may represent an early stage of pneumoconiosis, it was decided that it should at least be given a trial in any industry with a high silica risk. It was defined as "numerous linear or reticular opacities, the lung pattern being normal, accentuated or obscured."

Small Opacities

The two features to be considered in films showing small opacities are their dimensions and number, which should be assessed separately and defined by a special symbol. As the order in which these symbols are written is of little importance it may be left to the choice of each physician as he thinks fit. Nevertheless, in establishing the classification, it has seemed more logical to consider first of all the definition of the primary opacities, and thereafter to consider their classification according to their number.

The experts noted that the opacities varied in type and that more than one type could be present at the same time. They accepted the following three types, defined by the diameter of the predominant opacities.

"p" Opacities: The expression "pinhead," which is difficult to translate into some languages by a word beginning with "p," has been replaced by "punctiform" which has the advantage of retaining the symbol "p," already widely used. The word "punctiform" appeared to give an exact idea of the image observed, which refers to tiny opacities of various shapes up to about 1.5 mm.

"m" Opacities: The experts agreed that the symbol "m" should apply to opacities whose greatest diameter was between 1.5 and 3 mm. These might be defined as "micronodular" or "miliary" opacities. The term "miliary" (= millet grains) had the advantage of giving an impression of the size of the opacities, and, as such, was currently in use in several countries, though, in others, it had the disadvantage of implying a tuberculous etiology. All the experts agreed that the symbol "m" should not be used to denote "mixed" opacities.

"n" Opacities: The experts decided to apply the symbol "n" to nodular opacities of a size between three and 10 mm.

The experts were in agreement that the basic idea underlying the categorization of small opacities was that of number, but as a simple count was impossible, an indirect estimate of number had to be made from an unhappy combination of extension and profusion (density). It was agreed that the verbal definitions were unsatisfactory but it was hoped that the standard films would make up for their deficiencies.

The following definitions were accepted:

Category 1: a small number of opacities in an area equivalent to at least two anterior rib spaces and at the most not greater than one-third of the two lung fields.

Category 2: opacities more numerous and diffuse than in category one and distributed over most of the lung fields.

Category 3: very numerous profuse opacities

covering the whole or nearly the whole of the lung fields.

Large Opacities

The experts discussed at some length the various possible methods of classifying the large opacities. They all agreed on the need for a more accurate definition of the earliest category A, and that it was illogical to have a category D, denoting distortion of the pulmonary anatomy in a series, A, B and C, based on size. It was also agreed that as the upper limit of "n" opacities, and hence the lower limit of A opacities, was one cm it was better to retain metric measurements rather than rib spaces to define the upper limit of A. An attempt was also made to define categories B and C in terms of the longest diameter of the opacities but a test showed its impracticability.

The experts finally agreed to recognize three categories defined as follows:

Category A: an opacity having a longest diameter of between one and 5 cm, or several opacities each greater than one cm, the sum of whose longest diameters does not exceed five cm.

Category B: one or more opacities, larger or more numerous than those in category A, whose combined area does not exceed one-third of one lung field.

Category C: one or more large opacities, whose combined area exceeds one-third of one lung field. It was agreed that the background should be specified as far as possible.

Where there was an appreciable difference in the appearance of the two lungs, the two appearances might be described separately, beginning with the right lung. This separate description might apply to all the groups of opacities, but its use is optional; it should not entail any changes in the categorization of a radiograph, which should always be considered as a whole.

Recommended Additional Symbols

The experts agreed that the classification would be incomplete without a mention of the complications of pneumoconiosis or the other abnormalities seen on radiographs. The discussion showed how difficult it was to decide which complication should be mentioned and which should be omitted. It was also difficult to fix the lower limits of the complications which did deserve mention. For these reasons it was decided that the use of additional symbols should remain optional, but was strongly recommended because, in particular, useful statistical comparisons could be made.

It was also decided to denote the complications or abnormalities by symbols of two letters, in brackets, in order to avoid any confusion with the symbols p, m, n, etc. They were listed in alphabetical order to avoid giving any impression of a priority which it was difficult to determine. The experts indicated that several of these symbols could be used at the same time in cases where several complications or abnormalities coexisted on the same film. The following symbols and definitions were adopted:

(co): abnormalities of the cardiac outline; to be replaced by (cp): cor pulmonale, if this condition is strongly suspected;

(cv): cavity;

(di): significant distortion of the intrathoracic organs;

(em): marked emphysema;

(hi): markedly abnormal hilar shadows;

(pl): significant pleural abnormalities;

(px): pneumothorax;

(tb): opacities suggesting active tuberculosis. It was decided that the symbol (tb) should denote all those radiological opacities suspected of active tuberculosis to underline the need for carrying out all other necessary examinations.

Finally, it was decided that the classification should contain a category indicating films without radiographic evidence of pneumoconiosis and denoted by the symbol "O." This symbol could, where necessary, be supplemented by the use of the recommended additional symbols.

The experts prepared a schematic representation of the classification, which is reproduced herein. This scheme should be used in conjunction with the definitions and the standard films.

Application of the Classification to Miniature Radiography (Photofluorography)

There was a long discussion on the question of the possible application of the classification to miniature films. The great progress made in the last few years in the technique of miniature radiography and the generalized use on a large scale of this particularly cheap method of making systematic serial examinations, made it necessary to consider the application of the classification to small films. One solution might have been to make no reference to metrical measurement, but nevertheless, in order not to lose useful criteria, it was accepted that it would always be possible to make a mental adustment proportionate to the size of the miniature film or to read it by projecting the miniature up to standard size. The experts however stressed that even with the best available techniques, trials had shown that the difference in the interpretation of the films by different observers increased as the size of the films diminished, and that the diagnosis of "p" opacities and of category one was

particularly difficult. They stressed the need to employ mirror cameras, films of at least 70 by 70 mm, and only to use a perfect technique.

The experts recognized that, with existing techniques of photofluorography, there was an increased radiation dosage as compared with large films, and recommended that all possible measures should be taken to reduce radiation exposure to a minimum.

As the problems of applying the classification to miniature films had not yet been sufficiently studied, it was recommended that comparative trials should continue. Following the normal practice, all suspect miniature films should be systematically re-examined using a standard film.

The experts agreed that the inadequacies of the verbal descriptions were such that standard films illustrating the various radiographic appearances defined in the classification were necessary. They also agreed that an accurate and uniform application of the classification could only be achieved by having a sufficient number of sets of standard films available.

They examined several hundred films, preselected as the most typical, illustrating the qualitative and quantitative features of the radiographic appearances of the pneumoconioses and the different appearances they could have in certain industries and with certain types of dust exposure.

They recognized that it would be useful to establish a set of standard films, representative of the greatest possible number of radiographic appearances of the pneumoconioses, but, for economic reasons and to ensure the widest possible distribution of the collection, they decided to limit it, for the present, to a set representing only the middle stage of each category. In view of the classification finally adopted, the experts considered that the films available at the meeting did not exactly illustrate certain categories, and decided to complete the set of standard films at a later date.

The experts examined the reproductions of original films provided by a number of manufacturers. They unanimously recognized the fidelity of these reproductions and considered that they possessed all the necessary technical qualities.

It was recommended that the final selection of a definitive set of standard radiographs and the master copies from which the set will be reproduced should be entrusted to a small group of experts working in close collaboration with the I.L.O. and consisting of Dr. A. I. G. McLaughlin, Dr. V. Van Mechelen and Dr. A. L. Cochrane.

The experts recommended that the Office should (1) complete as soon as possible the definitive selection of the set of standard radiographs; (2) attach to the classification a set of reproductions of the standard radiographs selected; and (3) give the widest possible publicity to this illustrated classification.

In order to deal with questions of radiological technique relative to the classification, a small subcommittee was appointed, consisting of Professor Oosthuizen, Dr. Cochrane and Professor Dmokhovski.

A number of minimum technical requirements were regarded as necessary for the purpose of achieving satisfactory radiographic technique and standardization. On the basis of the report of the subcommittee the experts, after discussion, made the following recommendations:

(a) an x-ray generator with full rectification should be used with a minimum capacity of 200 mA but preferably of 400 mA, equipped with a voltage regulator and synchronous time switch; it is recommended that, wherever possible, an electronic time switch should be used;

(b) the unit should be fitted with a rotating anode tube with a target of no more than two by two mm and equipped, wherever possible, with an adjustable diaphragm to reduce scatter and excessive radiation to a minimum;

(c) a minimum of 60 kV but preferably of 70 kV is recommended;

(d) the voltage drop in the current supply should not exceed 10%;

(e) intensifying screens should be used, of the general purpose type, of medium speed, clean, with a smooth surface, and in close contact with the film at all points;

(f) a short exposure time of at most 0.1 second, but preferably of the order of 0.05 second is recommended;

(g) films should be of general purpose type, of medium sensitivity, and sufficiently large to cover the whole of the lung fields, including the costo-phrenic angles;

(h) the tube-film distance should be fixed and this distance should not be less than 150 cm;

(i) correct centering of the tube and positioning of the patient is important; the tube should be centered on the fourth thoracic vertebra, the subject stripped to the waist and placed in such a position as to bring the scapulae outside the lung fields. The film should be taken in mid-inspiration;

(j) great care should be exercised with darkroom technique, with insistence on constant temperature processing and the use of fresh film, developer and fixer; it is recommended that a minimum of five minutes be allowed for developing, or longer depending on the type of film used, 10 minutes for fixing and 30 minutes for washing; washing should be carried out in running water or in water frequently changed;

INTERNATIONAL CLASSIFICATION OF PERSISTENT RADIOLOGICAL OPACITIES IN THE LUNG FIELDS PROVOKED BY THE INHALATION OF MINERAL DUSTS[1] *(Geneva, 1958)*

	No pneumoconiosis	SUSPECT	PNEUMOCONIOSIS										
Type of opacity			Linear opacities	Small opacities								Large opacities		
Qualitative features	O	Z	L	p			m			n				
Quantitative features				1	2	3	1	2	3	1	2	3	A	B	C
Additional symbols	(co)/(cp)	(cv)	(di)	(em)			(hi)			(pl)			(px)		(tb)

[1]Including coal and carbon dusts.

DEFINITIONS AND COMMENTS

The object of the classification is to codify the radiological appearances of the pneumoconioses in a simple, easily reproducible way. It is intended to describe the radiographic appearances of the persistent opacities associated with pneumoconiosis, not to define pathological entities, nor to take into account the question of working capacity.

Where there is an appreciable difference in the appearance of the two lungs, the two appearances may be described separately, beginning with the right lung.

No pneumoconiosis	O	No radiographic evidence of pneumoconiosis.
Suspect opacities	Z	Increased lung markings.
		Pneumoconiosis
Linear opacities	L	Numerous linear or reticular opacities, the lung pattern being normal, accentuated or obscured.
		The following types are defined according to the greatest diameter of the predominant opacities. — *The categorization depends on the extent and the profusion of the opacities.*
Small opacities[1]	p	Punctiform opacities. Size up to 1.5 mm. — *Category 1:* A small number of opacities in an area equivalent to at least two anterior rib spaces and at the most not greater than one-third of the two lung fields.
	m	Micronodular or miliary opacities. Greatest diameter between 1.5 and 3 mm. — *Category 2:* Opacities more numerous and diffuse than in category 1 and distributed over most of the lung fields.
	n	Nodular opacities. Size between 3 and 10 mm. — *Category 3:* Very numerous profuse opacities covering the whole or nearly the whole of the lung fields.
Large opacities[2]	A	An opacity having a longest diameter of between 1 and 5 cm, or several opacities each greater than 1 cm, the sum of whose longest diameters does not exceed 5 cm.
	B	One or more opacities, larger or more numerous than those in category A, whose combined area does not exceed one-third of one lung field.
	C	One or more large opacities, whose combined area exceeds one-third of one lung field.
		Additional symbols
Recommended additional symbols[3]	(co)	abnormalities of the cardiac outline. To be replaced by (cp): cor pulmonale, if this condition is strongly suspected.
	(cv)	cavity.
	(di)	significant distortion of the intrathoracic organs.
	(em)	marked emphysema.
	(hi)	marked abnormalities of the hilar shadows.
	(pl)	significant pleural abnormalities.
	(px)	pneumothorax.
	(tb)	opacities suggestive of active tuberculosis.

[1]The choice of order of the symbols is left to the convenience of the physician. [2]The background of small opacities should be specified as far as possible. [3]The use of these symbols is optional.

it is further recommended that wherever possible, automatic processing should be used;

(k) the use of a photo-timer helps standardization and is therefore recommended;

(l) the use of a fixed or movable antidiffusion grid is recommended for use with subjects having an anteroposterior diameter of more than 25 cm.

The quality of a chest radiograph depends on the extent, clarity and contrast of the details that can be seen by the person reading the film. It was generally agreed that the vertebral bodies should be visible through the heart shadow but not the intervertebral discs. The latter should be visible through the trachea. It is not intended that this should prevent the use and development of new techniques such as high voltage radiography and advanced types of photo-timer.

Related Questions

The experts stressed the value to the Office of following closely developments in the pneumoconioses and, in particular, of achieving international application of the classification. The I.L.O. has already convened a number of scientific meetings in various countries and has been represented at others where problems of classification have been discussed. While in many countries the previous international classification has been widely used there are some, notably the United States and the Union of South Africa, in which the international classification had not yet found general acceptance. In this connection, reference was made to an international meeting of experts on pneumoconiosis shortly to be held in Johannesburg.

HYGIENIC NORMS IN HUNGARY

• JOHN BONTA, M.D.
Deputy Sanitary Inspector General
Budapest, Hungary

There were no hygienic safety regulations having the binding force of law in Hungary before 1945 except for the prevention of accidents. Although a public organization for the prevention of industrial injuries existed, acting on the basis of the Industry Control Act passed as early as 1898, there were only a few industry inspectors owing to the low stage of development in industry. The industry-inspectors acted in the capital and in the county seats, they had public authority functions, all of them were qualified engineers, but they did not receive adequate assistance from state and society as far as realization of their decisions were concerned.

Prevention of accidents and sanitary regulations took a favorable turn in 1952 when the Council of Ministers of the People's Republic and the Central Council of Hungarian Trade Unions made a joint decision in order to bring the old precautionary measures up to date and to publish special safety regulations for every industrial, agricultural and other profession. Between 1945 and 1952 the Minister of Health issued for some branches of industry such precautionary measures which already included hygienic norms. Since 1952 more than 60 safety regulations have been published — on basis of the aforementioned decision — for industry and agriculture, trade, public health and so on, one after the other. Safety regulations are determined by a joint decision of the Ministry and Trade Union of the branch of industry concerned and of the Ministry of Health and the Ministry of Labor. The Draft Model Code of Safety Regulations For Factories, published by the International Labour Office in 1947, gave valuable help to this work.

Although the safety regulations published up to now rested on the Model Code, it proved still to be necessary to pass a law decree — in conformity with the home conditions — that shall contain the principles for uniform, obligatory norms for hygienic safety regulations and for prevention of industrial injuries. After one year's conscientious work based on the Model Code, on foreign decrees and on home and foreign experience, the Minister of Health issued in 1955 the General Accident and Health Prevention Regulations.

These Regulations operate as basic documentation in the whole country and norms for prevention of accidents and safeguarding of public health are fixed by them. They are, in order to keep workers' life and body safe and sound, to be applied wherever workers are employed. Its rules are obligatory both for employers and employees. Both the directors of enterprises and establishments and the workers are responsible for their observance and realization.

According to the rules of organization the system of health and accident prevention shall be inspected in every factory once a month and the director and chief engineer of the enterprise, leader of the section, safety steward of the shop, labor-safety inspectors of the shop and of the Trade Unions and the doctor of the shop, if any, shall take part in the inspection. On the occasion of this inspection it shall be ascertained whether the norms of safety regulations were complied with. A written record shall be made with a time limit fixed in it for elimination of the inadequacy of the system. The director of the enterprise shall be responsible for the latter.

Duties of work group leaders, heads of sections or technical managers may be fulfilled only by persons having passed an examination relating to safety regulation of their branch of work.

One of the most significant sections of the Safety Regulations is the one according to which no planning or starting of new factories, no removal, extending or renovation of already existing ones, no establishing of new shops, no introduction of new technology and no manufacturing of new materials shall be permitted unless previously controlled and approved by the Ministry of Health and by the Central Council of Hungarian Trade Unions or by their respective competent organs. Even test runs or temporary quarters may not be unless in full

conformity with the rules of the general safety regulations. The investor shall be responsible for the application of the rules of the health and accident prevention regulations and for the investment itself, the planner for the project, the executor for the execution of the plan and the manufacturer for the manufacturing.

On the basis of all these the state organs, or rather organs of public health and social organizations and trade unions, always will be able to find person responsible for the nonobservance of the law.

It is in certain sections of the general safety regulations that the guiding principles for rules in connection with employment of workers are laid down, as well as instructions for information of workers, rules for establishing a workshop and of keeping it in operation, instructions relating to machinery, other equipments and tools, instructions concerning electric equipments, fire-protection, general transport, individual protection and health establishments.

It is in sections 8 and 9 of the Labor Act, issued in 1952, that norms of public health and labor hygiene are laid down relating to working women and youth under 18 years. The norms for conveying materials by working women and youth are based on these sections. These norms were published by the Minister of Health and they conform with the international norms.

We have no law decree relating to sanitary establishments of factories yet, but since 1952 obligatory principles were issued concerning planning of dressing-rooms, lavatories, shower-rooms and water closets if placed in a separate building or in a separate part of a building. We have used the M.C. as a guiding principle in this connection too, but preparing of some reasonable modifications based on experience is going on. We want to form the index-numbers of the above mentioned establishments by classifying the factories in conformity with their soiling character. We range the factories according to their grade of cleanliness in six groups:

1. Especially clean factories, such as food product factories in general, pharmaceutical works, etc.

2. Clean factroies or shops, such as food-markets, precision engineering, optical, power, ready made garment industry plants.

3. Medium soiled factories and workshops, such as ironworks, engineering works, timber industry plants, stonepits, brick-works, track maintenance, repair and service shops of tractor stations and state farms, etc.

4. Thoroughly soiled, dry factories, such as metallurgy, rolling mills, briqueting, glassmaking, spinning works, etc.

5. Thoroughly spoiled wet factories, such as coal-mines, factories working with oil, carbon black, phenol, acidified and alkaline products, etc.

6. Infectious, toxic and underground working places, such as working with hide and leather, wool, hair, bones, dye, aniline, lead, disinfection plants, hospital wards for infectious diseases, works for sanitary authorities, etc.

The method of planning is based on practical experience. For instance, on registering how many workers make use of the lavatory basins and shower rooms and for how long during one shift. Thereby we were able to ascertain the respective demands. According to all these, for instance, one lavatory basin is required in our planning for one to five workers, two basins for five to 10 workers, five for 10 to 50 and eight basins for 50 to 100 workers in factories as per one, two and three above.

Company Fights Heart Disease

A program to prevent heart disease among employees who have the greatest chance of developing it, is underway at the Standard Oil Co., Chicago. Part of the company's preventive medical program, the heart project is working in conjunction with local and national heart associations. The program, says Dr. Gilbeart H. Collings, Jr., Associate Medical Director, is being offered first to a limited number of volunteers selected from men 40 to 60 years old who have not had heart attacks, nor any evidence of heart disease. Standard's program aims to reduce high blood pressure and correct overweight by getting employees to change their diets and do more exercise, Dr. Collings says.

Followup studies will be made over a five year period to determine the success of this approach in reducing heart attacks, and whether it should be applied to the public at large.

—From *Industrial Relations News*, February 20, 1960.

Abstracts

Inferior Mesenteric Vascular Occlusion: Sigmoidoscopic Diagnosis

R. CARTER, R. VANIX, D. B. HINSHAW and C. E. STAFFORD in *Surgery*, November, 1959

Mesenteric vascular occlusion remains one of the most lethal of abdominal catastrophes, with no significant reduction in mortality despite many recent advances in surgery. One factor contributing to this high mortality is failure to make an early diagnosis. When mesenteric infarction is confined to the inferior mesenteric vessels, a clinical picture may be produced which can be diagnosed and successfully treated. This clinical picture or syndrome of left colon infarction consists of severe left lower abdominal pain and tenderness, usually accompanied by a bloody rectal discharge.

When a bloody rectal discharge is not present in left colon infarction, ischemic mucosal changes may frequently be demonstrated on sigmoidoscopic examination. These ischemic changes vary from black areas to gangrene and ulceration, and may begin in the rectosigmoid or at a higher level, depending upon the condition of the blood supply. The mucus membrane is the most sensitive part of the intestine to ischemic change and therefore changes here are present early, making possible the recognition of left colon infarction before such gross manifestations as a bloody rectal discharge. At surgery gangrenous left colon with thrombosis of the inferior mesenteric artery may be found and obstructive resection can easily be done.

—W. A. WICHOWSKI, M.D.

Experiences with Minimal Wound Dressings Following Head and Neck Surgery

R. G. CHAMBERS in *Surgery*, November, 1959

The objections to the classical method of dressing wounds about the head and neck are legion and need not be repeated. Both surgeons and patients would welcome an easily applied dressing which subjects the patient to no discomfort in its application, maintenance, or removal and which permits complete mobilization of the head and neck and constant observation of the wound from day to day without removal of the dressing, yet at the same time providing mechanical adherence of large skin flaps to underlying surfaces and offering bacteriologic protection. This 10 year experience with the use of suction beneath skin flaps and plastic applied to skin edges indicates that the method is satisfactory in all these respects. The instance of complications is no greater than with older, tried and true multigauze dressings and cannot be attributed to the suction itself.

Following the completion of the neck dissection, two multiple perforated number 16 or 18 French rubber catheters were inserted through separate stab wounds and tunneled beneath the skin and sutured into place. Suction was established and the skin flaps closed. The skin edges were sealed with collodion or one of the plastic sprays. Narrow-mesh gauze was then placed on the incision and collodion again applied. Suction was maintained for 36 to 72 hours. Sutures were removed on the fifth or sixth day. A total of 418 cases were treated in this manner and 86% were classed as satisfactory.

—W. A. WICHOWSKI, M.D.

An Evaluation of Pancreatic Cysts Treated at the Johns Hopkins Hospital

W. F. RIENHOFF, III in *Surgery*, February, 1960

The series included 24 cases treated over the past 20 years. The usual types were found with a preponderance of pseudocysts. It is realized that classifications are difficult to adhere to because the characteristic lining epithelium may be destroyed. Frequent involvement of all or part of the lesser peritoneal sac was seen with pseudocysts. The character of the fluid was not constant. The most constant clinical features were those of pain, weight loss, and the presence of an abdominal mass. Fasting blood sugar and blood amylase may be elevated. X-ray studies may show displacement of surrounding structures. Calcification should be looked for in the area of the cyst.

Treatment is controversial at best. Excision is the most logical procedure if at all feasible. Unfortunately, because of the high proportion of pseudocysts, excision has not been possible. The results obtained from the use of the Roux-en-Y cystojejunostomy indicate that it may be the most ideal of the drainage procedures. This is advised for the good risk patient, in whom the cyst cannot be excised. This procedure has the advantage of being a definitive, one-stage procedure. In cysts of the head of the pancreas, because of the proximity of the duodenum, an anastomosis between these two can be done.

Simpler external drainage procedures have a definite place for the poor risk patient, those with an acute, relatively thin walled cyst, and those with a cystic lesion of questionable origin. These procedures may be considered preliminary

ones in some because another operation may have to be done for persistent fistula, or a recurrent cyst. There was no operative mortality and in the Roux-en-Y cystojejunostomy cases no instance of reoperation was necessary.

—W. A. WICHOWSKI, M.D.

The Doctor's Job in the Retail Trade

H. M. BALFOUR, B.M. in *Personnel Management*, September, 1959

Stress and strain are becoming more and more of a problem and manifest themselves from straightforward irritability to complete physical and mental breakdown. Diseases which display a physical manifestation of a mental state are peptic ulcers, headaches, certain skin diseases, low backache and some forms of cold.

Employees of the retail trades, managers to salesmen, male and female, are not immune to these disorders, hence over-jobbing and under-jobbing are equally destructive to the equanimity of the individual.

The doctor can be of considerable help to management. A full medical examination on applicants in the author's opinion is a waste of time and money, although the taking of a medical history by a nurse is of considerable value.

Ultimate aim — prevention, not only of ill health, but of that great mass of slightly subnormal health and somewhat reduced efficiency.

—R. C. PAGE, M.D.

Books

Medical Aspects of Flight Safety

E. EVARD, ET AL., Eds. (New York: Pergamon Press, 1959) 308 pp., illustrated, $11.20

The performances of modern aircraft give to flight safety a more and more important role in the responsibilities of the authorities concerned. In spite of the improvements in aeronautical techniques, the human element is still an essential feature in the operation of an aircraft and the origin of aircraft accidents.

Therefore, the AGARD Aeromedical Panel devoted two symposia (Oslo-Copenhagen, 1956, and Paris, 1957) to "The Medical Aspects of Flight Safety." This AGARDograph gathers a selection of reports which are within the limits imposed by the terms of reference of this organization. The following sketch plan has been adopted: Chapter I, Flight Safety and Aircraft Accidents-Generalities; Chapter II, Unexplained Aircraft Accidents; Chapter III, Use of Pathology in Crash Injuries; Chapter IV, In Flight Protection; Chapter V, Some Special Problems.

Such a plan corresponds to a need of clarification and methodology. Chapter I is the essential part of this work; it discusses the physiological problems associated with high-altitude flight, the general or special, physiological and psychic factors, considered as a cause of most aircraft accidents.

Chapter II (The Unexplained Aircraft Accident) is composed of only three reports. The authors have limited their studies to this particular problem. They furnish statistical data and stories of unexplained aircraft accidents which awaken an obvious interest. But it is clear that a complete medical study of this category of accidents would have included a series of hypotheses, extrapolated from the positive data which were discussed in Chapter I, and which do not need a new emphasis.

Chapter III, devoted to Pathology, contains original and as yet little-known views on the importance of this discipline in the evaluation of the causes of accidents. These first results open a vista of the fruitful future, when pathology will have the development it deserves, in the procedure of inquiries, in all cases of aircraft accidents.

Chapter IV summarizes the present achievements in flight protection and proposes solutions for the future.

Chapter V is an appendix. It collects papers only indirectly related to the main subject.

In view of the international character of the conferences leading to this publication it is understandable why several chapters are published in French. Summaries of the French language papers in English appear and the reverse is true. This duality of languages constitutes no great handicap to the American reader, since the English presentations are adequate to the topic.

It may be a little disrespectful of this highly scientific contribution to refer to it as a scientific "Who Dunnit" and "What Dunnit," but that is its best description. The best portion of it is the portrayal of the far reaching and minute investigations of what caused unexplained aircraft disasters. Nothing is left unexplored. By way of example, high altitude flying is conducive to gastric expansion; gastric dilation favors the perforation of a gastric ulcer known or unknown; gastric perforation may be accompanied by massive hemorrhage; gross hemorrhage may have been the ultimate cause of more than one air catastrophe.

INDUSTRIAL MEDICINE AND SURGERY

ESTABLISHED 1932

Editor, CAREY P. McCORD, M.D.

Managing Editor, JOHN A. LAWRENCE

Consultant Editors:
CHARLES E. DUTCHESS, M.D.
CHESTER C. GUY, M.D.
SEWARD E. MILLER, M.D.

Abstracts:
JOHN H. SCHNEEWIND, M.D.
W. A. WICHOWSKI, M.D.
JOHN M. JOHNSTON, M.D.
MARVIN D. HENRY, M.D.
ROBERT COLLIER PAGE, M.D., F.A.C.P., M.R.C.H.

Associate Editors:
L. E. HAMLIN, M.D.
EDWARD C. HOLMBLAD, M.D., F.A.C.S.
RAYMOND HOUSEHOLDER, M.D.
RUTHERFORD T. JOHNSTONE, M.D.
HEDWIG S. KUHN, M.D.
ROBERT T. LEGGE, M.D., F.A.C.S.
CHRISTOPHER LEGGO, M.D.
M. N. NEWQUIST, M.D.
OSCAR A. SANDER, M.D.
GERRIT W. H. SCHEPERS, M.D.
JAMES K. STACK, M.D., F.A.C.S.
ROBERT M. WATROUS, M.D.
REX H. WILSON, M.D.
EDWARD R. ASTON, D.D.S.
WARREN A. COOK, A.B.
WILLIAM B. DEICHMANN, Ph.D., F.R.S.
HENRY FIELD SMYTH, Jr., Ph.D.
WILLIAM P. YANT, D.SC.

Overseas:
DR. AXEL AHLMARK, Sweden
PROF. DR. MED. E. W. BAADER, Germany
DR. H. P. DASTUR, India
DR. JOHN F. EUSTACE, Ireland
DR. DOUGLAS GORDON, Australia
DR. H. O. HOFMEYR, Union of South Africa
DR. BRANKO KESIĆ, Yugoslavia
DR. ARTHUR ERNESTO MONIZ, Portugal
PROF. DR. GIOVANNI PANCHERI, Italy
PROF. DR. JOSE PEDRO REGGI, Argentina
DR. RAFAEL PENALVER, Cuba
DR. A. SALMONT, France
DR. PERTTI SUMARI, Finland
DR. MASASHI SUZUKI, Japan
DR. A. R. THOMPSON, England
DR. A. UYTDENHOEF, Belgium

April, 1960

VOLUME XXIX

NUMBER 4

What Is a Profession?

Duly considered, a profession is any occupation (1) in which preparation is based on systematic instruction, (2) in which there are requirements for the use of the intellect rather than solely experience and (3) in which material returns are not the overriding characteristic. A bricklayer is not a member of a profession. He may possess high skills; he may have undergone long apprentice training; he leans heavily on experience rather than on his intellect; he may derive many satisfactions and enjoy pride in his accomplishments. Yet his major returns are limited to his pay envelope. He is a tradesman.

Being a "professional" does not necessarily mean one is of a profession. By the quirks of semantics some professionals are merely those who are not amateurs. When some promising sandlot baseball player accepts five dollars to play third base in a single game he has become a professional and theoretically is forever debarred from engaging in sports as an amateur. This has nothing to do with professions.

Broadly recognized, any occupation is a profession. Thus cobbling, slate roofing, bookbinding and skywriting are professions. Many blank forms handed out to applicants have a space headed "Profession." The answer might be "file clerk," "typist" or "proof reader" and all would be correct. All this is granted, but many plyers of trades are unconcerned whether they be in a profession. The carpenter, the tinner and the bartender engage in no worry as to any professional status. Many slightly higher occupations lead to demands for professional recognition. The beauty parlor operator is grieved unless cosmetology be accepted as a profession; so also the laboratory microscopist or the taxidermist. The tattoo artist proclaims his high estate as in a profession. Some engineers, perhaps with misgivings as to status, settle all that by a special category "PE" — professional engineer.

In the struggle for enhanced professional acceptance, some few groups actually have disqualified themselves for the high reaches. That once proud and envied creature, the operating room nurse, has now lowered herself in some places to become the "operation technician." In some job classifications that word "technician" connotes "not in a profession."

Difficult as it may be to believe, at this time a fair number of scientific groups are wallowing in debate as to whether they are in a profession. The answer is arrived upon in stark simplicity. No declaration that a certain group is a profession, no bylaw enactment, no governmental or other occupation classification will

determine whether a group constitutes a profession. The determinant will be the group itself, its qualification background, its requirements for the application of the intellect and the significance attached to material returns as the essence of the occupation. One of the groups now unsure of its status as a profession is made up of the personnel managers. Among others are the industrial hygienists. That group has indulged in a great deal of unnecessary gnashing of teeth because they have not been accepted on a professional parity with physicians. The industrial hygienists, clearly a specific professional group measured by any reasonable definition of profession, in no foreseeable future will attain equality with physicians, in acceptance as a profession. The reason for this is unrelated to attainment. Many generations ago tradition dictated that medicine is one of the three learned professions. Theology and law constitute the other two. That is a sacred top drawer reserved for these three professions. They, in truth, may have been the superior to all other professions at the time of the inauguration of the tradition.

Although it might be less difficult to unscramble eggs than to overthrow tradition, a just need may be to enlarge the category of the learned professions. Written only faintly is the admission that at the present time several other professions have requirements as to proficiency in excess of those that now occupy the top drawer. In the "new and enlarged" learned professions might appear modern astronomy, physics, chemistry and some engineering. That is an extension up to seven out of a self-imposed maximum of 10. That leaves three vacancies. If industrial hygiene continues its brilliant exploits and abandons its gnashing of teeth, it yet may come to occupy one of these vacancies. The best augury of a man's success in his profession is that he thinks it the finest in the world.

Para

One characteristic of the mature mind is that its owner gains satisfaction from a multiplicity of sources. Winston Churchill, manifestly of mature mind, not only is Winston the statesman, but Winston the painter, Winston the historian, Winston the smoker. The plaint is that organized satisfaction pursuits often are expensive of time and money. Golf may be, or the collection of antique pressed glass. Some others call for no expenditure of money and scarcely any time. One in that category is the exploration of words. Words, like persons, nations and rivers, have histories. No one need be a philologist, etymologist or semanticist to be an amateur word explorer. All the equipment required is a dictionary and the inclination.

Take any word. Take any portion of a word. Take the common prefix "para." Hundreds of words in English, in and out of medicine, make use of para or its shortened form "par" as a prefix. It would be exceptional if any physician passed an entire day without encountering some para words. Daily most persons see scores of other persons whose faces are shaped in part by the parotid glands. But who in that total knows the simplicity of the origin of that word "parotid?" It means nothing more than the gland located near to the ear — "para," "near to," and "otos," "the ear."

In ancient Greek para had many usages. It meant "near to," "along side of," "derived from," "by," "beyond," "except." Through some shiftings about in the Italian and French languages, para took on the meaning of "protect from." On a hot summer's day, parasols may be seen here and there. Did curiosity never become piqued as why a parasol is called a parasol? It is no more than "para," "to protect from" and "sol," "the sun." So also parachute is "para," "to protect from," and "chute," a fall. In this vein, paratyphoid is a disease *like* or *almost* typhoid. The parathyroids are organs *alongside* of the thyroid. Paranoia is the same para meaning, in this instance, "deviated from," the mental normal.

If something or someone is the perfect specimen, the term "paradigm" fits. Literally, the word means with its para prefix "showing up well alongside others of its kind." A closely similar word regarding being a model is "paragon." This means rubbed up against a whetstone. A paragon is someone polished up to perfection. Paracelsus is the Latin name of one of industrial medicine's heroes. Whence came this adopted name? Celsus was a famous Roman physician. His long later emulator, not content with Celsus, had to be greater. So he crowned himself Paracelsus.

Word exploration has its own boobytraps. Not all "para" words stem from an ancient prefix. Para-rubber does not mean near to, or like rubber. Para-rubber is the rubber that is obtained from the region of Para, a city in Brazil. Parakeet, the love bird, does not mean likeness or closeness to the keet, another bird. Parakeet, the entire word, springs from an origin that by free interpretation means a "Little Peter."

Seldom does an essay contain a built in revenge. This one does. If there be scoffers and sneerers at the banality of word exploration, then at once all such may be charged with immature minds. For them, back to the baseball returns, "no runs, no hits, no errors"; or back to matching pennies with the janitor downstairs.

Many different

emotional disturbances need

only *one* tranquilizer

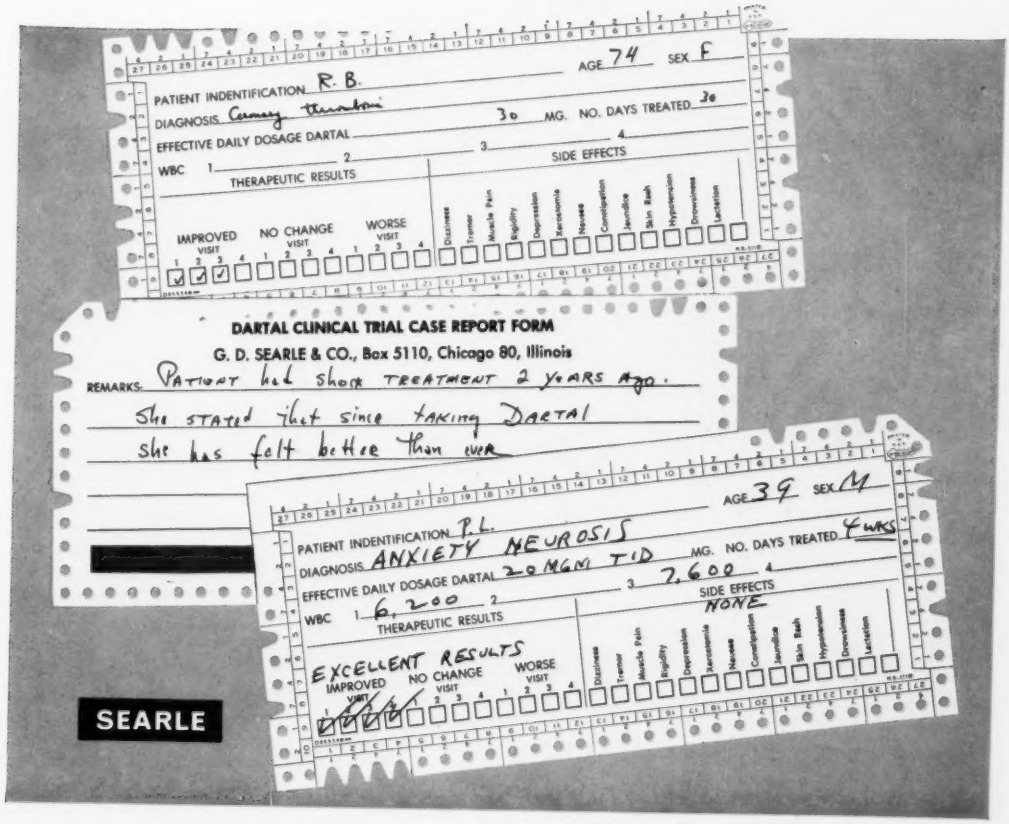
Dartal® *t.i.d.*

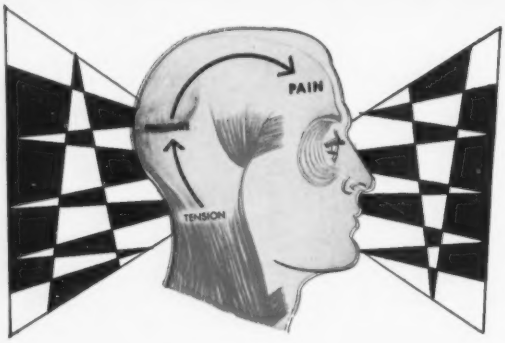
(thiopropazate dihydrochloride)

Because of its unusually numerous therapeutic indications and broad range of therapeutic activity, DARTAL is an outstanding tranquilizer for general use.

Dartal produced consistent results not only under controlled clinical conditions but also under conditions of everyday office practice.			
	Diagnosis	**Number of Patients**	**Number Improved**
Reports from office trials by 156 physicians	Anxiety and Tension States	476	321
	Duodenal Ulcer	14	11
	Irritable Colon (including spastic constipation)	13	8
	Menopausal Syndrome	40	28
	Hypertensive Cardiovascular Disease	14	13

with low dosage: Only one tablet of 2 or 5 or 10 mg. t.i.d.
with relative safety: Evidence indicates that Dartal is not icterogenic.


PATIENT INDENTIFICATION R. B.
AGE 74 SEX F
DIAGNOSIS Cerebral thrombosis
EFFECTIVE DAILY DOSAGE DARTAL 30 MG. NO. DAYS TREATED 30
WBC 1 2 3 4
THERAPEUTIC RESULTS
SIDE EFFECTS
IMPROVED VISIT 1 2 3 4
NO CHANGE VISIT 1 2 3 4
WORSE VISIT 1 2 3 4
Dizziness Tremor Muscle Pain Rigidity Depression Xerostomia Nausea Constipation Jaundice Skin Rash Hypertension Drowsiness Lactation
DARTAL CLINICAL TRIAL CASE REPORT FORM
G. D. SEARLE & CO., Box 5110, Chicago 80, Illinois
REMARKS: PATIENT had shock TREATMENT 2 YEARS Ago.
She STATED that since taking DARTAL
she has felt better than ever
PATIENT INDENTIFICATION P. L.
AGE 39 SEX M
DIAGNOSIS ANXIETY NEUROSIS
EFFECTIVE DAILY DOSAGE DARTAL 20 MGM TID MG. NO. DAYS TREATED 4 WKS
WBC 1 6,200 2 3 7,600 4
THERAPEUTIC RESULTS
SIDE EFFECTS NONE
EXCELLENT RESULTS
IMPROVED VISIT 1 2 3 4
NO CHANGE VISIT 1 2 3 4
WORSE VISIT 1 2 3 4
Dizziness Tremor Muscle Pain Rigidity Depression Xerostomia Nausea Constipation Jaundice Skin Rash Hypertension Drowsiness Lactation
SEARLE



1. In ameliorating pain of tension headache...

2. ANACIN exerts a better 'total' effect...

3. ANACIN provides rapid, prolonged analgesia—also eases tension and pressure.

ANACIN®
ANALGESIC TABLETS

For a better 'total' effect in pain-relief

WHITEHALL LABORATORIES, NEW YORK, N.Y.

COMMENT AND OPINION

Hush Your Rattlin' Tongue

A wife should never nag her middle-aged husband. It may cause him to drop dead, Dr. Kenneth Hutchin warned in an article in the British medical magazine *Family Doctor*.

Middle-aged men, said Hutchin — a specialist in ailments of the heart and arteries — are surprisingly fragile.

"They are not as tough as their wives think," he declared.

"All men in their 40's and over who do nonmanual work and therefore get insufficient exercise are a risk for failure of the coronary artery," he asserted.

Assaulting the eardums of such a type with tiresome conversation, Hutchin said, is perilous.

To Drink Longer, Drink Less

Problem drinkers cost industry many millions yearly, and the figure grows as the number of drinkers multiply. A recent National Council on Alcoholism workshop session came up with these cost-cutting techniques: Threaten the alcoholic with the loss of his job. "Contrary to public opinion," says Dr. Daniel Feldman of the New York U.-Bellevue Medical Center, "under duress of protecting his job, the alcoholic can be cured," and offer a rehabilitation program that attracts the attendance of problem drinkers. One large U. S. corporation, for example, has a former alcoholic on its employee relations staff lecturing on "How to Enjoy Drinking Longer." Drawing a large turnout of problem drinkers, the lecturer uses his skid-row experiences to drive home the lesson, "the way to drink longer is to drink less."

Are some jobs more prone to alcoholism than others? NCA notes that a high proportion of salesmen and advertising executives, whose jobs require considerable "social" contact with customers and clients, suffer from alcoholism. Examine jobs to see to what extent management endorses the use of alcohol, NCA advises. Armed with this information, effective remedial action can be taken.

—*Industrial Relations News*, Nov. 14, 1959.

On the Alert

Every industrial doctor, nurse and hygienist knows that persons who work or are employed in the manufacture of toxic chemicals may have a sudden medical crisis away from their place of employment. In such an emergency it is vitally necessary that the attending physician know what chemical the patient works with to determine quickly if the chemical is a critical factor in the patient's illness.

In this day of increasing travel when it is possible for people to journey hundreds of miles in the matter of hours, it is a "must" for individuals working with toxic products as well as sufferers from serious allergies, diabetes, hemophilia or heart trouble to wear an identification tag engraved with information of the wearer's particular medical problem.

The Medic-Alert Foundation has devised a stainless steel bracelet as well as a disc with a Medic-Alert emblem which is an ideal answer to this problem.

The obvious value of the Medic-Alert emblem has been acclaimed by doctors, hospital administrators and law enforcement officials as well as wearers throughout the United States and many parts of the world. They agree that a Medic-Alert bracelet or tag attached to the person is superior to a card or other warning statement that can be overlooked or separated from an individual in time of need.

The Medic-Alert Nonprofit Foundation provides a special reference file with names, serial numbers and physical data of persons who subscribe for membership and obtain an emblem. It also maintains 24-hour telephone service and accepts emergency telephone calls collect regarding members from doctors anywhere in the United States and Canada. For further information write Medic-Alert, 1030 Sierra Drive, Turlock, California.

Compensation Restrictions

Management proposals to tighten Kentucky's workmen's compensation law were included in a bill introduced Wednesday in the

OUR 64th YEAR

WOODWARD MEDICAL PERSONNEL BUREAU
FORMERLY AZNOES
185 N. Wabash - Chicago, Ill.

Founders of the counseling service to the medical profession, serving medicine with distinction over half a century.

Telephone: RAndolph 6-5682

POSITIONS WANTED

Medical Director: Int Med, Dipl; 3 yrs, priv pract; 10 yrs, priv pract, Int Med; 4 yrs, Asst Med Dir, lge automotive indus; seeks Med directshp, large multi-plant indus; any location.

Medical Director: 7 yrs, group practice; now seeks Indus Med position w/oppor do surgery; any location; Age 36.

Medical Director: Grad, Jefferson; 1 yr, private general pract; 1 yr, in-plant trng indus hygiene; 3 yrs, assoc med dir, very lge heavy-metal fabricating co; now med dir, lge co; prefs MW or E; middle 30's; avail 30 days.

Medical Director: 2 yrs, priv genl pract; 8 yrs, Med Dir, Nat'l Co; intermittent courses, Int Med & Card, '52-'58; tired of travel assignment & desires regular hours, Indus med posi; prefers E or Calif, will consider others.

Medical Director: M.P.H; 10 yrs, exper, indus med; exceptionally qual'd, indus hygiene; prefs New Eng, Calif or foreign; speaks French & Spanish; middle 40's; immediately available.

Medical Director: After 7 yrs as staff phy, import indus, 7 yrs as med dir, import div of one of Amer's largest automotive industries; well-qualified chest diseases; seeks Med D'reshp in corp involvg multiple plants; prefs Midwest or East.

Medical Director of large plant or company or Assistant Medical Director; elig, Occupational Med; 4 yrs, priv grp; 4 yrs, examining staff phys, lge hsp; seeks Denver, NY or Midwest areas; Age 33.

Assistant Medical Director: 36; MD, Univ of Ill, CM; sevl yrs, flight surg; 10 yrs priv genl pract plus indus clinical med & adm; sevl smaller plants; prefs full-time indus post; immed avail; DNB.

Internist: Board Elig, med & cardio; trnd univ hosp; inter'd indus med as a career; seeks further exper in adm or clinical capacity; 2 yrs, indus exper as staff phy and district chief; grad Hahnemann; early 30's; prefers Pa, N.J., Del or eastern seaboard.

Industrial Hygienist: MD, Ann Arbor; MPH, sevl yrs, priv pract; 10 yrs, public hlth surveyor, rsrch assoc; past yr, priv consultant basis in which field he has no further interest; prefs NY State; consider others; lic'd Mich, Fla, Calif; DNB—immed. avail.

Staff Physician: MPH, Univ of Mich; MD, Colo; 1 yr, post-grad, Indus Hlth, Harvard; 6 yrs, Indus phys, important oil co; seeks full-time indus hlth wk—dir active med, indus hygiene & safety prog; Kansas City area; Age 36.

Staff Physician: 3 yrs, med staff member, lge southwestern corp; leaving because of family illness—seeks Indus post, Calif, SW, or SE company; immed. avail.

Staff Physician: Working toward Cert'n, Occupational Med; M.I.H., Harvard Schl of Publ Hlth; 18 mos, Int Med res wk; seeks Indus posi, permanent & full-time; East or Midwest.

Staff Physician: Seven years, owned & operated 50-bed hosp; wishes change in medical career; seeks Industrial post combining med ability w/administrative, counseling or clinical rsrch; prefers Southwest or Midwest but will locate anywhere; Age 35.

Staff Physician: Two years, Director, Blood & plasma center; three and one-half yrs, private, general practice; 3 yrs, Medical officer, USAF; seeks Industrial Medicine in Southeast, Southwest or California.

Staff Physician: Eight years private, general practice; seeks Industrial post, preferably pharmaceutical or insur company; seeks California or Western States only; Age 38.

IF IN NEED OF MEDICAL PERSONNEL, WRITE US SO WE MAY PREPARE AN INDIVIDUAL SURVEY FOR YOU

We offer you our best endeavor—our integrity—our 64 year record of effective placement achievement

STRICTLY CONFIDENTIAL

State Senate.

The bill would require workers in most cases to build stronger cases in support of their claims for compensation benefits.

Fred Bullard, representing the Kentucky Coal Association, said the bill seeks to:

1. Remove the grounds for claims by employees who contract silicosis in another state but discover the disease after coming to Kentucky. A provision would require two years of exposure in Kentucky "immediately next before" disability or death.

2. Provide methods for computing true average weekly earnings instead of multiplying one day's pay by five, as now provided.

3. Provide that a total permanent disability award be set aside upon motion of any interested party, and a new award made for permanent partial disability if the employee becomes able to earn remuneration through available suitable employment.

4. Provide credits for compensation for previous partial disabilities, whether paid or not, if employee becomes totally disabled, so that no employee shall receive more than 100% disability.

5. Provide that no injury to a member of the body shall constitute total disability and that compensation shall not exceed that which would be awarded for loss of the member.

6. Provide for payments based on three stages of silicosis and create a medical panel of three members to be appointed by the Governor.

7. Enable an employee or prospective employee to waive compensation for aggravation of a prevalent condition or one to which he is susceptible in his employment.

8. Provide for election by the employer for coverage under an enumerated schedule of occupational diseases rather than under the general occupational-disease schedule.

—Kyle Vance in *Louisville* (Ky.) *Courier-Journal*, Feb. 25, 1960.

An announcement

to the physician in industrial practice

In the wide range of medical emergencies which occur in industry, immediate oxygen may well be vital. Two of the three leading causes of accidental death are reversible with oxygen.

The manufacturers of OXY SWIG, pioneers in the field of portable oxygen, are now marketing an emergency unit (56 liters) engineered to meet the exacting demands of physicians to whom a *dependable* supply of emergency oxygen is important.

The new OXY SWIG unit is a precision instrument designed to do just one thing: *Deliver a constant flow of oxygen, at a rate you set, with maximum safeguards against rebreathing.*

It is a highly portable, completely dependable and relatively inexpensive (the professional price, $54 – or leasing arrangements may be made through Oxy Swig Inc. for lots of 24 or more units).

The physician in industrial practice may now insist on these features in any portable unit he buys or recommends.

- A constant flow which does not diminish with lowered tank pressure.
- A flow which can be regulated, from three to twelve liters per minute.
- Mask valves which minimize carbon dioxide buildup.

Developed for physicians, from criteria set by physicians, the new OXY SWIG invites comparison.

METROX

When larger quantities of oxygen are desirable – and portability is less a factor – METROX supplies a 305-liter unit at $87.

Both units are in carrying cases. Both are equipped with adaptors for quick, easy refill, and both are furnished with the latest in safety mask design.

OXY SWIG INC.

4335 GOVERNOR PRINTZ BLVD., WILMINGTON 2, DEL.
144 TITLEY AVENUE, PASADENA, CALIFORNIA

Prevention Proved

The recent widespread incidence of influenza and pneumonia, which has caused absenteeism in schools, businesses, commercial and industrial establishments, offers a vivid example of the worth of industrial medical programs.

The Kinston, N.C., Dacron Plant has a full-time clinic at which its personnel is given daily attention, in addition to preventive inoculations against influenza and other ailments. Its absenteeism has been relatively light during the past 30 days, when other businesses have had many personnel out due to illness.

A full-time clinical program such as that at the Dacron Plant would be too costly for the average small business or industry to offer. But there are other ways of encouraging preventive medicine and inoculations against epidemics. Perhaps before another seasonal outbreak of influenza occurs in this area, many other businesses and industries will explore the possibility of preventive medicine.

Another advantage Lenoir

RESULTS IN 366 PATIENTS WITH STOMACH ULCERS

DIAGNOSIS	TOTAL	MARKED IMPROVEMENT WITH X-RAY GAINS	MARKED IMPROVEMENT	SLIGHT IMPROVEMENT	NO IMPROVEMENT
PEPTIC	50	**10**	**29**	9	2
GASTRIC	56	**11**	**33**	10	2
DUODENAL	256	**39**	**175**	33	9
PYLORIC	4	—	**1**	2	1
TOTAL	366	**60**	**238**	54	14
		16%	**65%**	15%	4%

Summary of investigators' reports.

81% MARKED IMPROVEMENT REPORTED

proven relief of pain, spasm and nervous tension without the side effects of belladonna, bromides or barbiturates

INDICATIONS—

duodenal and gastric ulcer
gastritis
colitis
spastic and irritable colon
gastric hypermotility
esophageal spasm
intestinal colic
functional diarrhea
G. I. symptoms of anxiety states

NOW—2 FORMS
for adjustability of dosage

Milpath - 400—Yellow, scored tablets of 400 mg. meprobamate and 25 mg. tridihexethyl chloride (formerly supplied as the iodide). Bottle of 50.

Dosage: 1 tablet t.i.d. at mealtime and 2 at bedtime.

Milpath - 200—Yellow, coated tablets of 200 mg. meprobamate and 25 mg. tridihexethyl chloride. Bottle of 50.

Dosage: 1 or 2 tablets t.i.d. at mealtime and 2 at bedtime.

Milpath®

®Miltown + *anticholinergic*

WALLACE LABORATORIES *New Brunswick, N. J.*

813

County, N.C., enjoyed over some neighboring communities during the recent epidemic was the full use of two hospitals. One of the hospitals at New Bern was closed a few months ago and many of its residents had to be taken to Kinston or other places for hospitalization. Seldom has this community's hospital facilities been more greatly appreciated than during the 1960 flu outbreak.

But the best medicine of all is preventive medicine and the concerns who use it have again proved this fact.

Improved with Age

A hardy corps of personnel managers, who seem convinced that after a worker reaches age 45 he or she should be retired to a rocking chair, would do well to listen to the words of Labor Secretary James P. Mitchell who says: "Older office workers are as productive as their younger counterparts."

Upon what does Secretary Mitchell base this statement? It follows results compiled in a study which compared the work performances of some 6,000 workers of various age groups on comparable office jobs. This and other studies by the labor department proved that older workers have lower rates of absenteeism and turnover than younger workers; that they are more consistent in their performance, and frequently produce at a faster rate than the younger ones.

The study showed further that workers 45 years and over produce, on the average, about as much work as those aged 35 to 45 — and slightly more than workers under 25. And accuracy of performance reportedly was almost identical in each of the six age groups studied. There is another factor which makes many older office workers equal or more valuable than their younger counterparts. Secretary Mitchell did not mention it, because it is something which would not show up in any kind of study or test.

This is the fact that these older workers were brought up in a day when "work was work." They progressed on individual merit — not length of time spent in a job. When these oldsters started their careers there was more emphasis on individual responsibility. It was shouldered; not shrugged off or shared. And workers developed and took pride in doing a progressively better job. The present generation of younger workers would do well to take a leaf from the oldsters' book and benefit from the experience and patterns of those "ancient relics of 45 and over."

Scarab Club

"Scarab Club" membership is awarded to employees whose feet are saved from injury by safety shoes at the Grumman Aircraft Engineering Corp., Bethpage, N.Y. The award in-

CAMP TRADE MARK *dorsolumbar supports*

For Conservative Treatment of Orthopedic Conditions

This groin length support features Camp's famous double side-lacing adjustment. Note how the back cups well under the gluteus and extends over the scapula to assure rigid support with least discomfort. Casings in back permit extra steels for added reinforcement.

Made of strong cream fabric, this support comes equipped with two 17" shaped steels. The triple side-lacing adjustment, elastic releases at top front and groin, and the foam rubber padded shoulder straps provide both comfort and strong support.

Some of the many conditions in which it is necessary to support a portion or all of the dorsal vertebrae include: dorsal spine fractures, operative procedures, arthritis, juvenile osteochondritis and cases of strain in the more severe forms of faulty body mechanics. Camp designs the most complete line of supports for such cases (4 women's supports, 3 men's supports and children's supports) to meet the specific requirements of the physician and the cosmetic needs of the patient.

All models feature the side-lacing adjustments to help steady the pelvis and provide accompanying support to the gluteal region. Padded shoulder straps and a well boned back gives even more rigid-support when reinforced with strong pliable steels to the lumbar area and parts of the dorsal spine.

Detailed information available on request

S. H. CAMP & COMPANY, JACKSON, MICHIGAN

CAMP TRADE MARK

S. H. Camp & Company of Canada, Ltd., Trenton, Ontario

cludes a certificate suitable for framing, listing details of the accident in which the injury is prevented, plus a scarab.

—From *Industrial Relations News*, Jan. 30, 1960.

Recreation and Health—Two to One

Americans are spending twice as much money for recreation, alcoholic beverages and tobacco as they are for medical care, the Health Insurance Institute reported today.

Two out of every 18 dollars the public spends for its personal needs goes for recreation, alcohol or tobacco compared to an expenditure for medical care of one out of every 18 dollars, said the Institute.

According to data based on 1958 figures and released by the U. S. Department of Commerce, Americans spent $293 billion on their personal needs.

Some $17 billion of this sum, or 5.8%, was spent for recreation while $9.2 billion (3.1%) went for alcohol and $6.3 billion (2.1%) was used to purchase tobacco products, for a total of $32.5 billion, or 11% of total personal consumption expenditures.

In comparison, $16.4 billion (5.6%) was spent on medical care, stated the Institute. Other public expenditures in 1958 included $67 billion for food, $38 billion for housing, nearly $34 billion for transportation, $32 billion for clothing, accessories and jewelry, almost $4 billion for religious and welfare activities, and $3.4 billion for education and research.

The distribution of each dollar spent for medical care changed sharply in the period from 1938 to 1958, said the Institute.

In 1958, physicians and dentists received a smaller share of the medical care dollar than they did in 1938, while hospitals, medicines and appliances received a larger share.

From each dollar of the $2.7 billion spent for medical care in 1938, physicians received 30 cents, but by 1958 doctors were getting 26 cents out of each dollar.

An even sharper drop in distribution of the medical care dollar was experienced by dentists, whose share of 15 cents on the dollar was reduced to 10 cents.

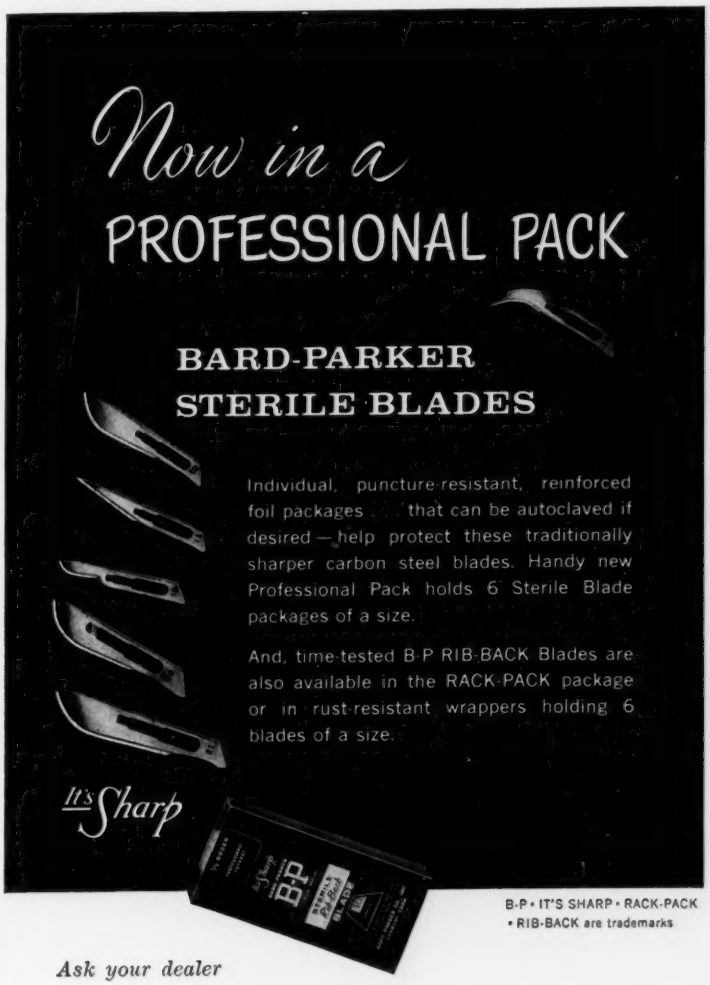
The slack was taken up by hospitals, medicines and appliances, declared the Institute. Twenty-two cents out of every medical care dollar spent in 1938 was for hospital services, but by 1958, this slice of the dollar was up to 31 cents. Hospitals attribute this rise to the expansion of hospital services and their greater utilization which has increased the number and variety of skilled personnel required.

The rise was less dramatic in medicines and appliances, which climbed from 26 cents to 27 cents.

The amount spent for all other medical needs, which include other professional services and nursing home care, dropped from seven cents to six cents.

Number One

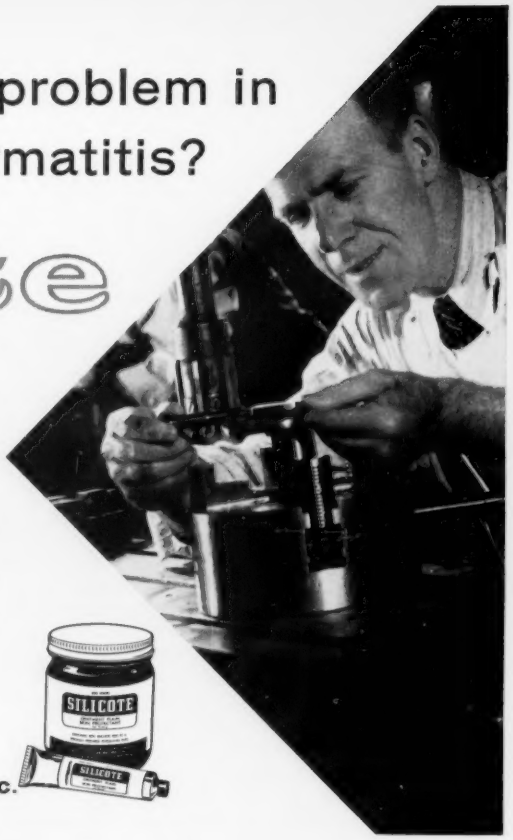
In terms of disability and compensation costs, silicosis is the number one occupational disease in the U. S.


Now in a
PROFESSIONAL PACK
BARD-PARKER
STERILE BLADES
Individual, puncture-resistant, reinforced foil packages . . . that can be autoclaved if desired — help protect these traditionally sharper carbon steel blades. Handy new Professional Pack holds 6 Sterile Blade packages of a size.
And, time-tested B-P RIB-BACK Blades are also available in the RACK-PACK package or in rust-resistant wrappers holding 6 blades of a size.
It's Sharp
B-P • IT'S SHARP • RACK-PACK • RIB-BACK are trademarks
Ask your dealer
BARD-PARKER COMPANY, INC.
DANBURY, CONNECTICUT
A DIVISION OF BECTON, DICKINSON AND COMPANY

do you have a problem in industrial dermatitis?

Silicote

SILICONE SKIN PROTECTANT



Silicote provides an effective barrier against a wide range of skin irritants. It adheres to the skin, is not easily removed, and, when properly applied, can not be seen nor felt on the skin, permitting workers performing delicate tasks to stay on the job.

PROTECTS AGAINST

—water, acids, alkalies, foods, organic materials, resins, cement, tanning solutions, inks, polishes, woods, glue, coolants, soluble cutting oils, rubber, plastics, synthetics, dyes, metals, paints, lacquers, thinners, etc.

IN TREATMENT

of contact dermatoses, Silicote clears up many cases not responsive to other therapy.

Silicote is the only preparation containing 30% silicones (dimethicone) in specially prepared petrolatum base. Silicote is non-occlusive.

May we work with you in your particular problem? Send for clinical supply.

ARNAR-STONE LABORATORIES, INC.

225 E. PROSPECT AVE., MOUNT PROSPECT, ILLINOIS

ILLE: A DISTINGUISHED NAME IN HYDRO- AND PHYSICAL THERAPY EQUIPMENT

←

HM-655
COMBINATION ARM, LEG or HIP UNIT
(Stationary)

For subaqua therapy. Stainless steel tank with electric turbine ejector and thermostatic mixing valve.

MA-105 →
MOISTAIRE HEAT THERAPY UNIT

Delivers temperature-controlled moist heat safely and effectively. Complete with stainless steel treatment hood, table, latex foam table pad, nylon moistureproof curtains and 4-quart filling can.

ILLE ELECTRIC CORPORATION
Reach Road, Williamsport, Pa.

Index of Advertisers

American Cyanamid Co. ... 28
American Tobacco Co. ... 38
Armour Pharmaceutical Co. ... 7, 16
Arnar-Stone Laboratories ... 48
Bard-Parker Co., Inc. ... 47
Becton, Dickinson & Co. 14, 23
Birtcher Corp. ... 52
Bristol-Myers Co. ... 31
Burdick Corp. ... 50
Burton Manufacturing Co. ... 49
Cambridge Instrument Co., Inc. ... 50
Camp & Co., S. H. ... 46
Carbisulphoil Co. ... 49
Chesebrough-Pond's, Inc. ... 36
Ciba Pharmaceutical Products, Inc. ... 13, 30
Classified ... 49
Coca-Cola Co. ... 53
Desitin Chemical Co ... 39
Dome Chemicals, Inc. ... 26
Eaton Laboratories ... 20, 21
Geriatric Pharmaceutical Co. 52
Granite City Steel Co. ... 52
Ille Electric Corp. ... 48
Lilly & Co., Eli ... 40
McNeil Laboratories, Inc. ... 33, 3rd cover
Merck Sharp & Dohme ... 1
National Assoc. for Mental Health ... 54
Oxy Swig, Inc. ... 44
Reed & Carnrick ... 18
Riker Laboratories, Inc. ... 2nd cover
Robins Co., Inc., A. H. 14, 22
Roerig & Co., J. B. ... 5
Schering Corp. ... 53
Searle & Co., G. D. ... 41
Squibb & Sons, E. R. ... 2, 15, 24, 25
Sugar Beet Products Co. ... 54
Syntex Chemical Co., Inc. ... 34
Tailby-Nason Co., Inc. ... 32
Tassette, Inc. ... 35
Thayer Laboratories ... 29
Titmus Optical Co. ... 12
Upjohn Co. ... 10, 11
Wallace Laboratories ... 19, 45, 4th cover
White Laboratories, Inc. ... 37
Whitehall Laboratories 27, 42
Winthrop Laboratories ... 17
Woodward Medical Personnel Bureau ... 43
Wyeth Laboratories, Inc. ... 9, 51

BURTON Presents . . .

Clinically Proved
3 MINUTE
Field Screening Test for Glaucoma and other Visual Field Defects . . .

MODEL NO. B-100

U.S. Patent NO. 2835162

Authentic...

Harrington-Flocks CONTROLLED Multiple Pattern Visual Screener and Tangent Screen . . .

You owe this simple and fast test to every patient! Utilizes safe, controlled ultra violet black light which provides a scientifically controlled stimulus to the retina. Procedure has been tested and clinically proved in medical clinics for over 5 years. It is unfair to doctor and patient to use methods not clinically proved. Ask your dealer for a demonstration.

•

Model No. B-100

PRICE $149.50 f.o.b. Factory

(Floorstand Model No. B-101, Price $197.50 F.O.B. Factory)

•

FREE! VALUABLE REPRINTS

(1) "The Multiple Pattern Visual Field Screener — an Evaluation" by Lt. G. F. Hilton, M.S.C.; (2) "Glaucoma Detection in Industry — Multiple Field Pattern Test" by H. S. Kuhn, M.D. (Industrial Medicine & Surgery); (3) Abstractions from 5 year evaluation by Drs. Harrington and Flocks. Ask your dealer or write us.

BURTON M-D-L DIVISION
of Burton Manufacturing Company
2562 Colorado Ave. • Santa Monica, Calif.

"BURTON"... the oldest name in professional lighting . . . also manufactures a complete line of lights for the doctor's office, clinic and receiving room, for examination and minor surgery . . . ultra violet (Woods) black lights, with and without magnification . . . combination 3-in-1 white light, ultra violet black light PLUS magnifier . . . pipette shakers . . . microscope and other laboratory illuminators, etc.

SEND FOR COMPLETE CATALOG

YOUNG PHYSICIAN WANTED

preferably internist, interested in preventive and occupational medicine, to join Medical Staff of leading Midwest manufacturer.

All replies held strictly confidential.

PLEASE REPLY TO:
JL-20
P. O. Box 44-306
Miami 44, Florida

FOILLE® FIRST AID *Spray* FOR BURNS

FOILLE — the antiseptic, analgesic dressing — is indicated for fast, effective relief from pain of burns, sunburn, cuts, wounds and abrasions. Large or small areas can be sprayed thoroughly to provide prompt patient comfort and eliminate painful swabbing. FOILLE fights infection and promotes healing.

CARBISULPHOIL COMPANY • DALLAS, TEXAS

NOW in 3-oz. and 10-oz. SPRAY . . .

ANTISEPTIC • ANALGESIC
FOILLE®

***ORDER* FROM YOUR FIRST AID SUPPLIER**

CAMBRIDGE

CARDIAC DIAGNOSTIC INSTRUMENTS

ASSURE THE DOCTOR OF

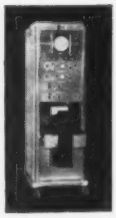
Universally Accepted Records, Fundamental Accuracy, Lifetime Dependability, Minimum Maintenance Expense.

"VERSA-SCRIBE" The Versatile Electrocardiograph

A completely new portable instrument with performance and versatility not offered by any other direct-writing electrocardiograph. Size 5¼" x 10½" x 17", weight 20 lbs.

Multi-Channel Recorders

For physiological research, cardiac catheterization and routine electrocardiography. When used with pertinent transducers, these new Recorders provide simultaneous indication and recording of EKGs, EEGs, stethograms and other physiological phenomena. Available in Photographic Recording and Direct Writing Models.



Dye-Dilution Curve Recorder

Records changes of concentration of a dye injected at selected sites in the venous circulation. Determines cardiac output; detects and locates cardiac shunts.

Operating Room Cardioscope

Provides continuous observation of the Electrocardiogram, electroencephalogram and heart-rate during surgery. Warns of approaching cardiac stand-still. Explosion-proof. This cardioscope is a "must" for the modern Operating Room.

"Simpli-Scribe" Direct Writer Electrocardiograph

Provides the Cardiologist, Clinic or Hospital with a portable direct writing Electrocardiograph of utmost usefulness and accuracy. Size 10⅜" x 10⅜" x 11"; weight 28 pounds, complete with all accessories.

Audio-Visual Heart Sound Recorder

Enables simultaneous hearing, seeing and recording heart sounds. Recording may be made on magnetic discs for play-back and viewing at any time.

Pulmonary Function Tester

A completely integrated, easy-to-use instrument for the determination of such functions as Functional Residual Capacity, Tidal Volume, Vital Capacity, Total Lung Capacity, Total Breathing Capacity, Basal Metabolic Rate, etc.

CAMBRIDGE ALSO MAKES EDUCATIONAL CARDIOSCOPES, PLETHYSMOGRAPHS, ELECTROKYMOGRAPHS, RESEARCH pH METERS, HUXLEY ULTRA MICROTOMES, POCKET DOSIMETERS AND LINDEMANN-RYERSON ELECTROMETERS

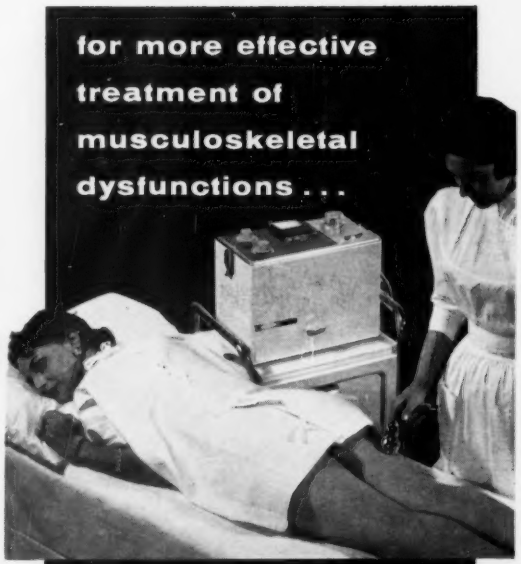
Send for Descriptive Literature

CAMBRIDGE INSTRUMENT CO., INC.

3716 Grand Central Terminal, New York, N. Y.

Cleveland 2, Ohio, 8419 Lake Avenue
Detroit 2, Mich., 7410 Woodward Avenue
Oak Park, Ill., 6605 West North Avenue
Jenkintown, Pa., 479 Old York Road
Silver Spring, Md., 933 Gist Avenue

PIONEER MANUFACTURERS OF THE ELECTROCARDIOGRAPH



THE BURDICK UT-400 ULTRASONIC UNIT

offers continuous or pulsed ultrasound

To treat conditions where both heating and mechanical effects are desired, the Burdick UT-400 provides *continuous* ultrasonic energy. Where a greater proportion of mechanical effect to thermal is indicated, a flick of the switch supplies *pulsed* energy. This versatile unit is especially recommended for treating acute or chronic conditions of osteoarthritis, capsulitis, myositis, bursitis, fibrositis and periarthritis. An impressive number of case reports attest to the real value of this relatively new therapeutic agent. Ask for a demonstration of the Burdick UT-400 soon.

A new booklet of abstracts—"Ultrasonic Therapy —A Symposium"—is available without charge. Please address your request to the Burdick Corporation, Milton, Wisconsin.

THE BURDICK CORPORATION

MILTON, WISCONSIN

Branch Offices: New York • Chicago • Atlanta • Los Angeles

Dealers in all principal cities

Burdick®

first in preference for relief from cough

quiets the cough and calms the patient

Expectorant
Antihistaminic

Sedative
Topical anesthetic

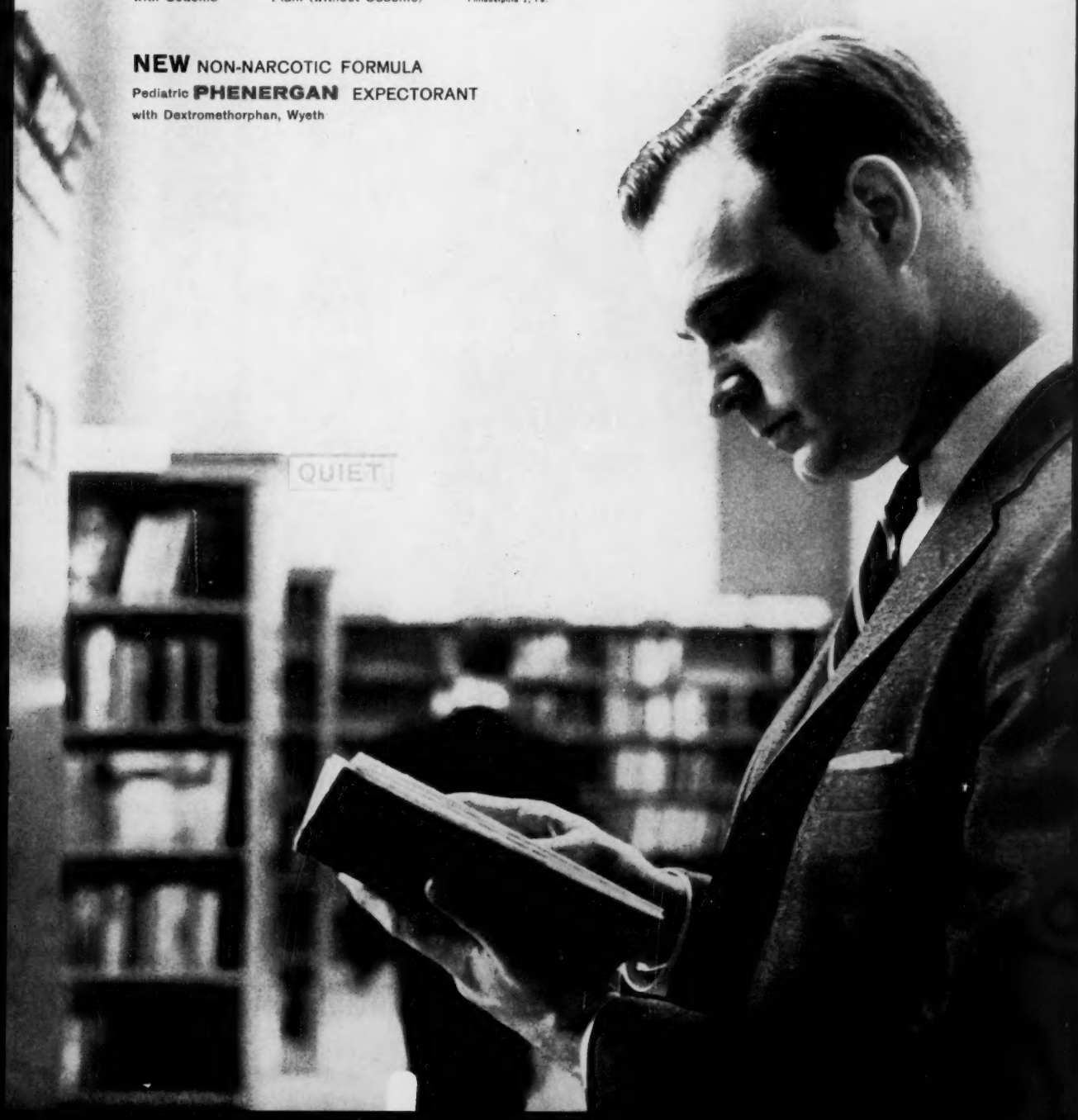
PHENERGAN®

EXPECTORANT

Promethazine Expectorant, Wyeth
with Codeine Plain (without Codeine)

Wyeth®
Philadelphia 1, Pa.

NEW NON-NARCOTIC FORMULA
Pediatric **PHENERGAN** EXPECTORANT
with Dextromethorphan, Wyeth



INDUSTRIAL MEDICAL DIRECTOR

Small steel company in Metropolitan St. Louis, Missouri, area desires services of physician to serve as director of Medical Department. Opportunity to develop employee health program and expand present medical services for 5000 employees. Present part-time medical director desires to devote full time to private practice. Adequate staff of well-qualified industrial nurses presently employed. Will conduct pre-employment and recurring post-employment physical examinations. Must be able to perform some surgery. Salary open and dependent upon qualifications of physician. Directorship provides unusual opportunities for personal and professional growth.

Please forward resume of education, experience, salary requirements, and personal data.

DIRECTOR OF PERSONNEL
GRANITE CITY STEEL COMPANY
GRANITE CITY, ILLINOIS

new modern site-of-pain relief in musculoskeletal distress

GER-O-FOAM

(aerosol foam)

eases pain, spasm; improves function

Deeply absorbed to permeate affected sensory endings, the proven local analgesic-anesthetic agents in GER-O-FOAM give relief in minutes, lasting for hours in . . . rheumatoid arthritis, osteoarthritis, muscle sprain, fibromyositis, low back pain, etc.

IN A NEW CLINICAL STUDY[1] GER-O-FOAM gave "satisfactory" results in 85% of chronic musculoskeletal patients. Response was "striking" in certain intractable acute conditions . . . "permitting functional exercises otherwise impossible."

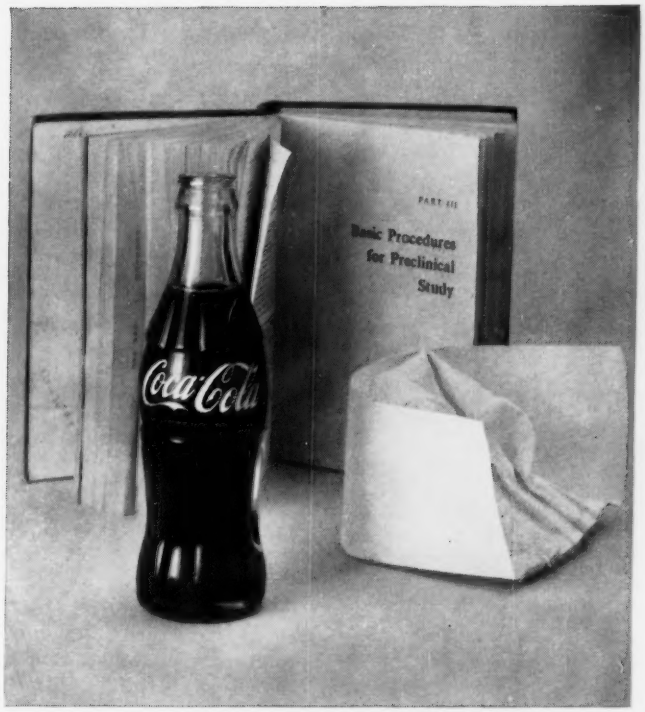
GER-O-FOAM combines: Methyl salicylate 30%, benzocaine 1%, traces of volatile oils in a specially processed, neutralized emulsion base, for aerosol use.

samples, reprint and literature from

GERIATRIC PHARMACEUTICAL CORPORATION Bellerose New York

GERIATRIC

1. Gordon, E. E. and Haas, A.: Industrial Medicine & Surgery 28:217, 1959.



When too many tasks
seem to crowd
the unyielding hours,
a welcome
"pause that refreshes"
with ice-cold Coca-Cola
often puts things
into manageable order.

DRINK
Coca-Cola
REG. U.S. PAT. OFF.

in a series of washroom survey comments from "SBS soap counselors"

Management was amazed how much they could save with a modern cream soap!

John F. Murphy

is a veteran SBS soap counselor in a major industrial market, has helped many managements pinpoint the most economical solution to skin cleansing problems. This is a typical example.

"Our washroom surveys found maintenance dollars (and employee morale) literally disappearing down the drains at a midwest stamping plant employing 2300 workers. Many employees complained that the powdered soap in general use irritated their skin. Few dispensers were operating efficiently. The result was a lavish waste of soap, slippery floors, unsightly washrooms . . . maintenance couldn't keep up! OPERATION PINPOINT demonstrated not only how this plant could cut its soap costs but how it could drastically reduce maintenance costs by using SBS-60, a *cream* deodorant soap specially formulated for industrial use. This modern cleansing agent removes *all* the general soils in the stamping plant . . . is equally safe on hands, face or body . . . and virtually eliminates soap waste!"

Money-saving suggestions like this *begin* with OPERATION PINPOINT — a thought-provoking presentation filled with facts about skin hygiene and washroom maintenance. The SBS soap counselor serving your area can pinpoint the right soap to do every skin cleansing job best and at lowest cost in your plant. Let him show you OPERATION PINPOINT . . . just call your nearest SBS office, collect.

the washword of industry

SBS sugar beet products co.

SAGINAW, MICH. • Los Angeles, Calif. • Newark, N.J.
CANADA: Chemical By-Products, Ltd., Toronto, Ontario

No one is immune to our #1 health problem

Mental illness hospitalizes MORE people than polio, heart, tuberculosis, cancer—all other diseases combined. Outside the hospital 1 in 10 need psychiatric help. Next—let's Conquer Mental Illness!!

Give at the Sign of the Ringing Bell

NATIONAL ASSOCIATION FOR MENTAL HEALTH
MH

EFFECTIVE THERAPY FOR
TINEA PEDIS (ATHLETE'S FOOT) AND
OTHER RINGWORM INFECTIONS

GRiFULVIN®

Griseofulvin

ORAL ANTIFUNGAL AGENT

Before treatment, **T. rubrum** infection.

After 2 months' treatment with GRIFULVIN.

typical response of tinea pedis to GRIFULVIN

- itching and burning relieved in **2 to 6 days**
- vesicles and scaly patches disappear completely; cultures and KOH scrapings usually become negative in **2 to 6 weeks**
- side effects are rare, mild and transitory

Average dose: 250 mg. q.i.d. Adjunctive treatment with topical keratolytic agents will aid in eradicating the fungi from the skin of the feet.

Supplied: 250 mg. scored tablets, colored aquamarine, imprinted McNEIL, bottles of 16 and 100.

Blank, H.; Smith, J. G., Jr.; Roth, F. J., Jr., and Zaias, N.: J.A.M.A. **171**:2168 (Dec. 19) 1959.

Photographs courtesy of Harvey Blank, M.D., Miami, Florida

McNEIL McNEIL LABORATORIES, INC • PHILADELPHIA 32, PA.

324R50

for the tense and nervous patient

relief comes fast and comfortably

–does not produce autonomic side reactions
–does not impair mental efficiency, motor control, or normal behavior.

Usual Dosage: One or two 400 mg. tablets t.i.d.

Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets or as MEPROTABS*—400 mg. *unmarked,* coated tablets.

Miltown®

meprobamate (Wallace)

WALLACE LABORATORIES / *New Brunswick, N. J.*

CM-8284